THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal

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Reading Matter Contents.....page 1122
Alphabetical Index to Advertisers " 171
Classified List of Advertisers ... " 163
Advertising and Subscription Rates " 170

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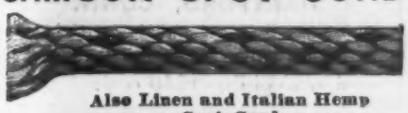

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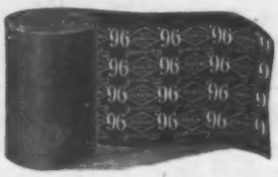

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THE IRON AGE

New York, Thursday, March 30, 1905.

The Plant of the Ridgway Machine Tool Company.

Recently Built at Ridgway, Pa., for the Building of High Class Heavy Machine Tools.

Nestled among the hills of northwestern Pennsylvania, in the town of Ridgway, a new industrial enterprise has just been fairly launched upon its career. It is backed by capitalists of that section who accumulated their fortunes before the surrounding hills were stripped of the lumber and tanbark for which but a short time ago they were noted. Seeking to find an outlet for their capital and realizing the advantages of the mechanical trades, having made a decided success of the dynamo and engine works of their town, which they control, these men resolved to embark in the building of heavy machine tools.

They saw that in view of the widespread use of the recent high grades of tool steels there was a field for a line of heavy machinery designed especially for the rapid and accurate production of large work and concluded to meet this demand. The importance of such an undertaking will be readily appreciated, for vast sums of money must be expended in order to do things on a large scale at the outset, making an investment for which no direct return can reasonably be expected for a long time. That the investors have shown a willingness to enter upon the project with a full realization of these requirements is evidenced by the excellent plant with which they are beginning operations.

Having entered upon the project they soon discovered that most essential requirements were men of creative genius, mechanical skill and executive ability to bring out the most modern line of product and to effect the efficient working organization necessary for the successful carrying on of such an enterprise. That they have been successful in finding these men is attested by the admirable equipment and operation of this plant, but more particularly still by its early fruits, the initial product of the plant, a huge boring mill, which is illustrated and described on page 1074.

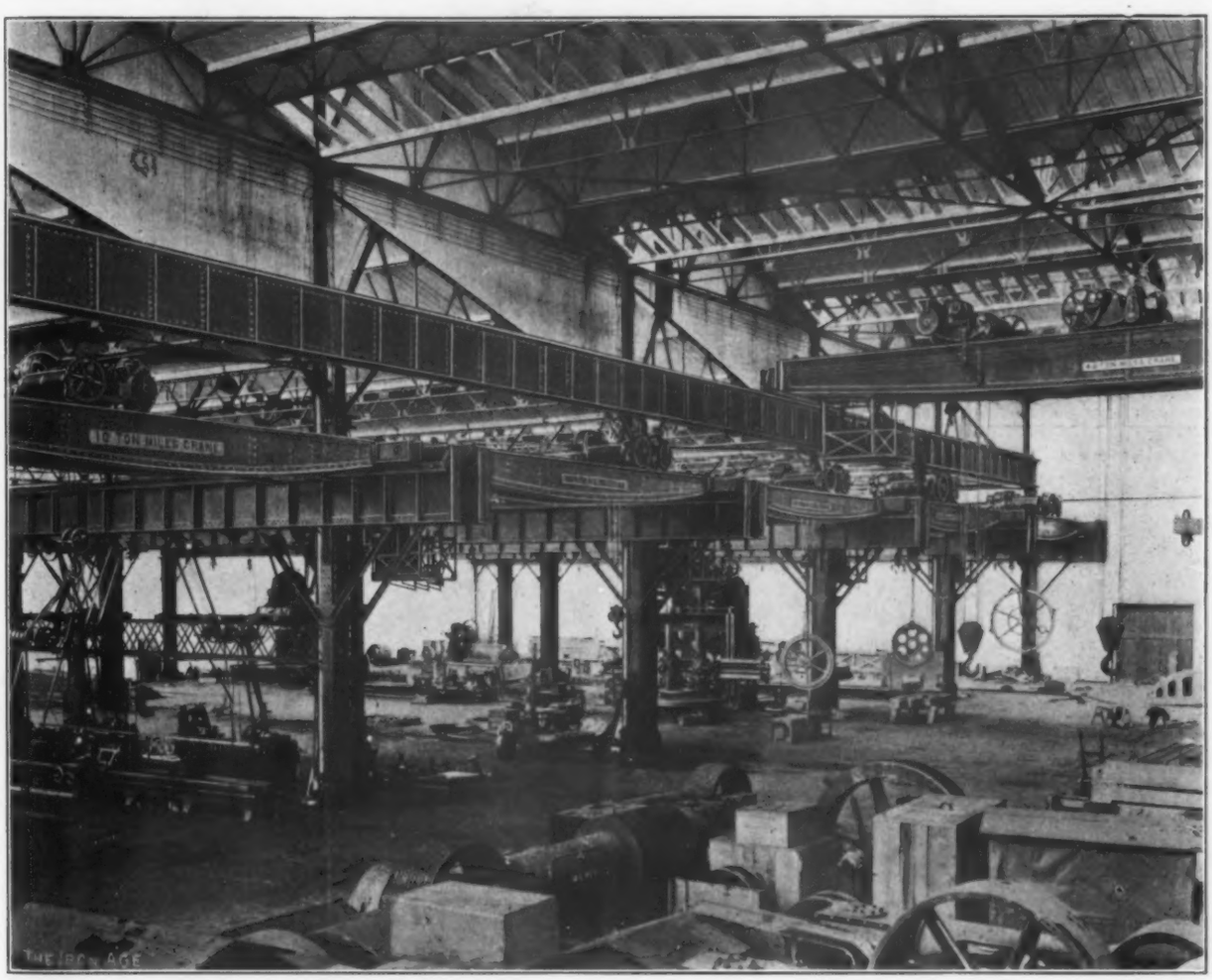


Fig. 1.—View Down the Main Erecting Bay, Showing the Excellent Traveling Crane Equipment.

The Ridgway Machine Tool Company was incorporated in 1903, the officers of the company being H. R. Hyde, president; P. R. Smith, vice-president; R. J. Powell, secretary, and E. C. Powell, treasurer. It was many months later, however, before designs were finally decided upon for its plant. Owing to the congested condition of the structural mills throughout the country it was almost a year later that the last of the structural

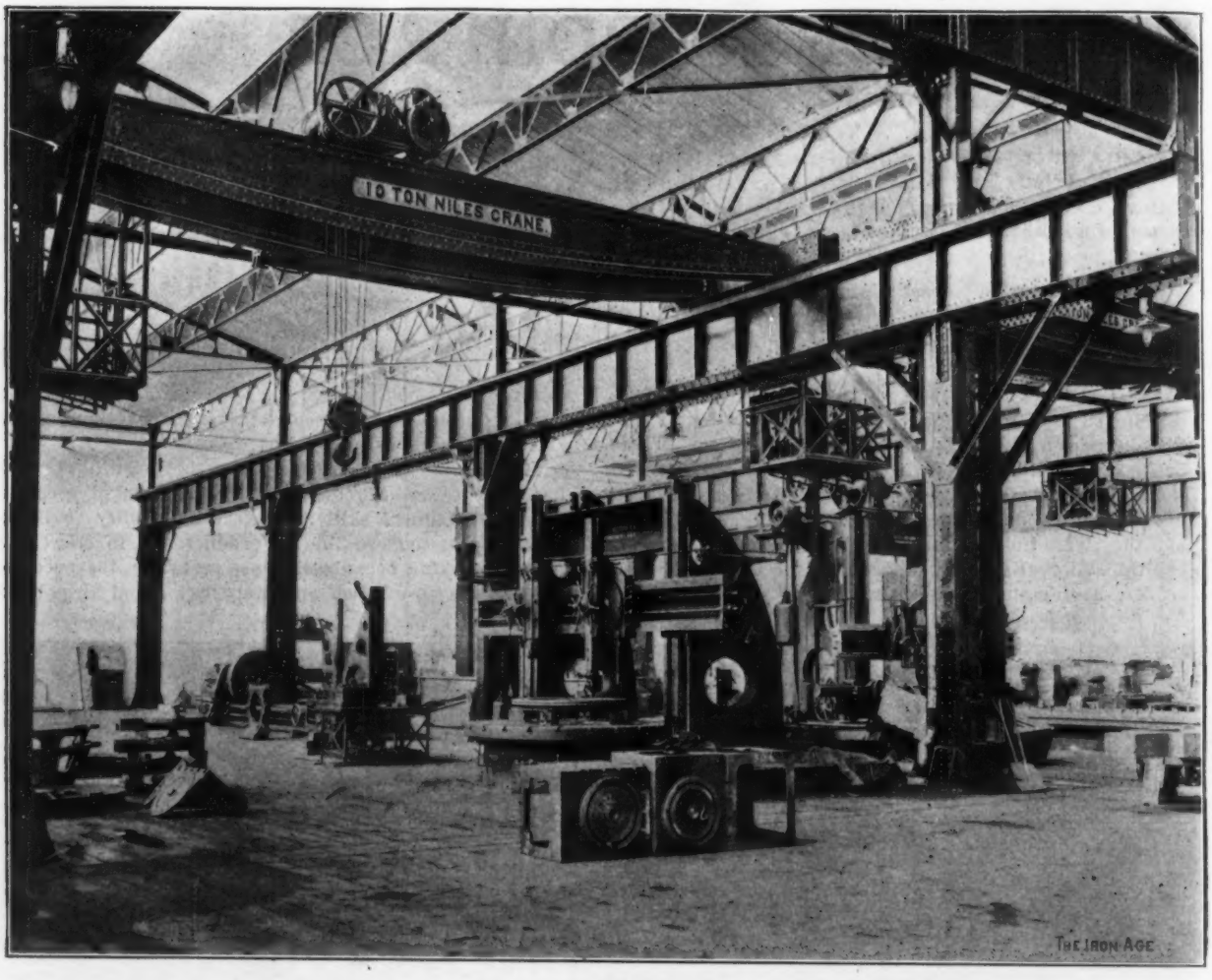


Fig. 2.—One of the Machine Shop Bays, Showing Crane Girder Projecting into Erecting Bay.

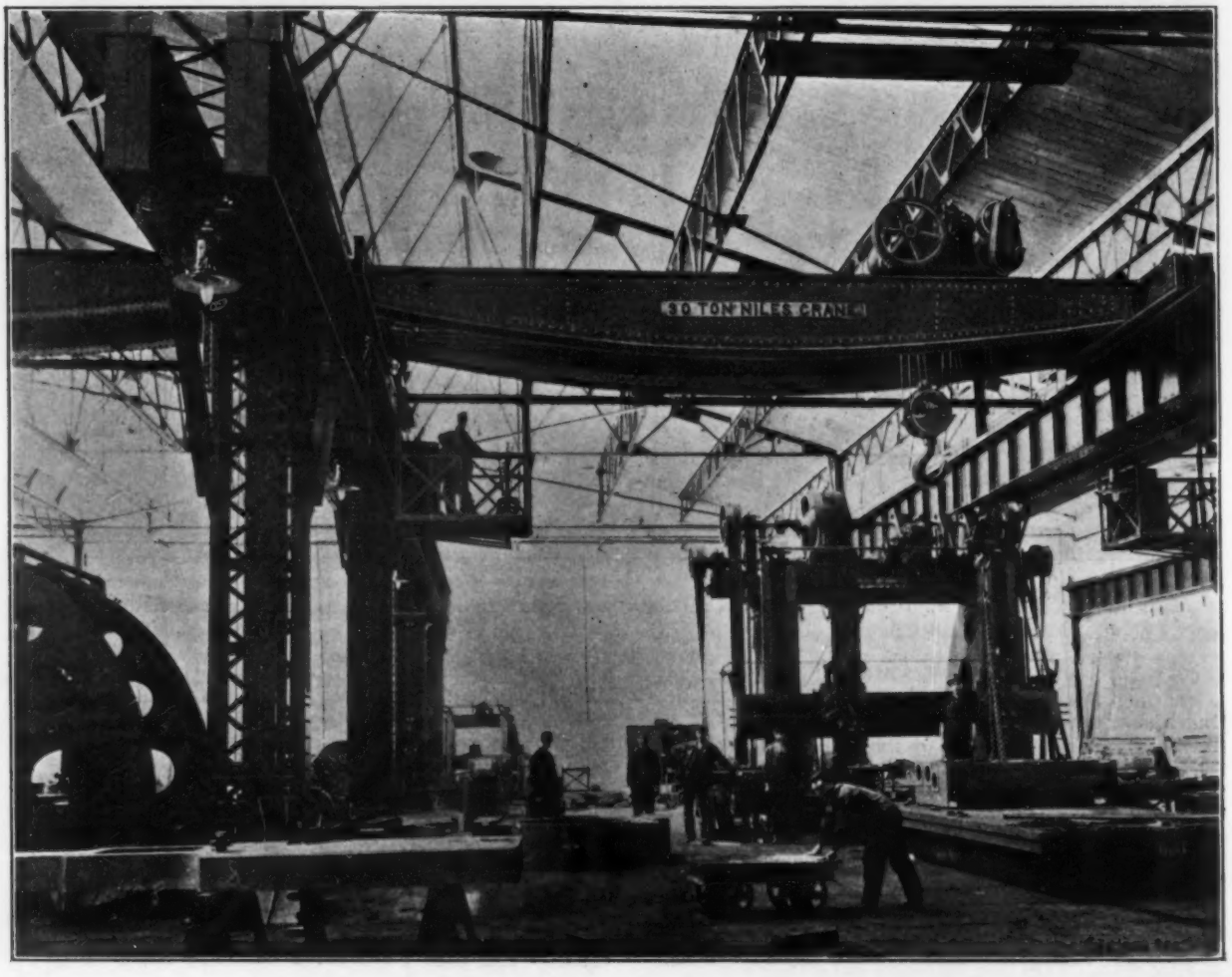


Fig. 3.—Looking Down One of the Heavy Machine Shop Bays from Erecting Floor.

steel for the buildings was delivered. The work of construction proceeded slowly until May, 1903, when the company secured the services of Lewis H. Morgan as superintendent. Mr. Morgan was admirably fitted to take hold of the work, as after several years of important engineering work in England he had had 14 years of experience with American practice, holding important posts at the works of the Pond Machine Tool Company at Plainfield, N. J. He was given complete charge of the entire project, and after finishing the construction of the buildings in short order and purchasing several tools to serve as a nucleus of the shops' equipment he set out for business. He received an order immediately and the first machine was finished and placed on exhibition at the plant on January 14, 1905.

The plant is a model one in every respect, and is now running with upward of 150 operatives, but its full capacity when completely organized will give employment to about 400 to 500 men.

The first consideration given in laying out the plant was that the design be such as to permit of systematic increase without disarrangement of the original plan of operation. The next was that each unit of floor space should be fully and completely lighted, and that provision be made that additions would not cut off the initial light. Both of these features are rigidly carried out, with a result that cannot fail to attract the attention of one visiting the plant.

The Crane Service.

The third feature is one which is most striking, being noticeable throughout the entire plant, but especially so in the instance of the machine and erecting shops. It is the elaborate crane system employed. The scheme of handling facilities takes into account the character of work to be done, being in keeping with the purpose not only of the entire plant, that of building heavy machinery, but taking into consideration the special functions of each department contributing to the final result. In Fig. 1 this point is plainly illustrated. The erecting shop is left entirely free from stationary tools, taking the form of a clean sweep 225 feet long and 75 feet wide along one entire end of the machine shop. Along its whole length is the crane runway, placed 34 feet 2½ inches above the floor. The girders of the runway are 4 feet 1½ inches high. On this the main electric traveling crane traverses the erecting shop. This crane has two 40-ton hoists, each of which is supplemented by a 10-ton auxiliary hoist. The extra 40-ton hoist was necessitated on account of the shipping railroad being at a right angle to the crane runway, and in making shipment of long machines a double lift is necessary. Each of the six machine shop bays has its own electric traveling crane, and these all run at a right angle to the erecting shop. The runways for these cranes are made of 3 foot 4¼ inch girders, which are placed but 25 feet 5¾ inches above the floor. These runways project about 10 feet into the erecting shop underneath its crane runway, as shown in Fig. 1. This permits the handling of material direct from one crane to another in a very easy and economical manner. This feature has proved of great value in the handling of materials from one bay of the machine shop to the other, or for distributing materials among the various machine shop bays or collecting materials for erecting purposes.

The machine shop bays are designed to be equipped according to the most economical division of the work. Beginning at the farthest end of the shop, at what might be termed bays Nos. 5 and 6, it is intended to perform the heaviest machining operations. In these bays the very heaviest tools of the shop equipment are located: consequently the two heaviest of the machine shop cranes traverse them. Both cranes are of 30 tons capacity and each has a 5-ton auxiliary hoist. In the

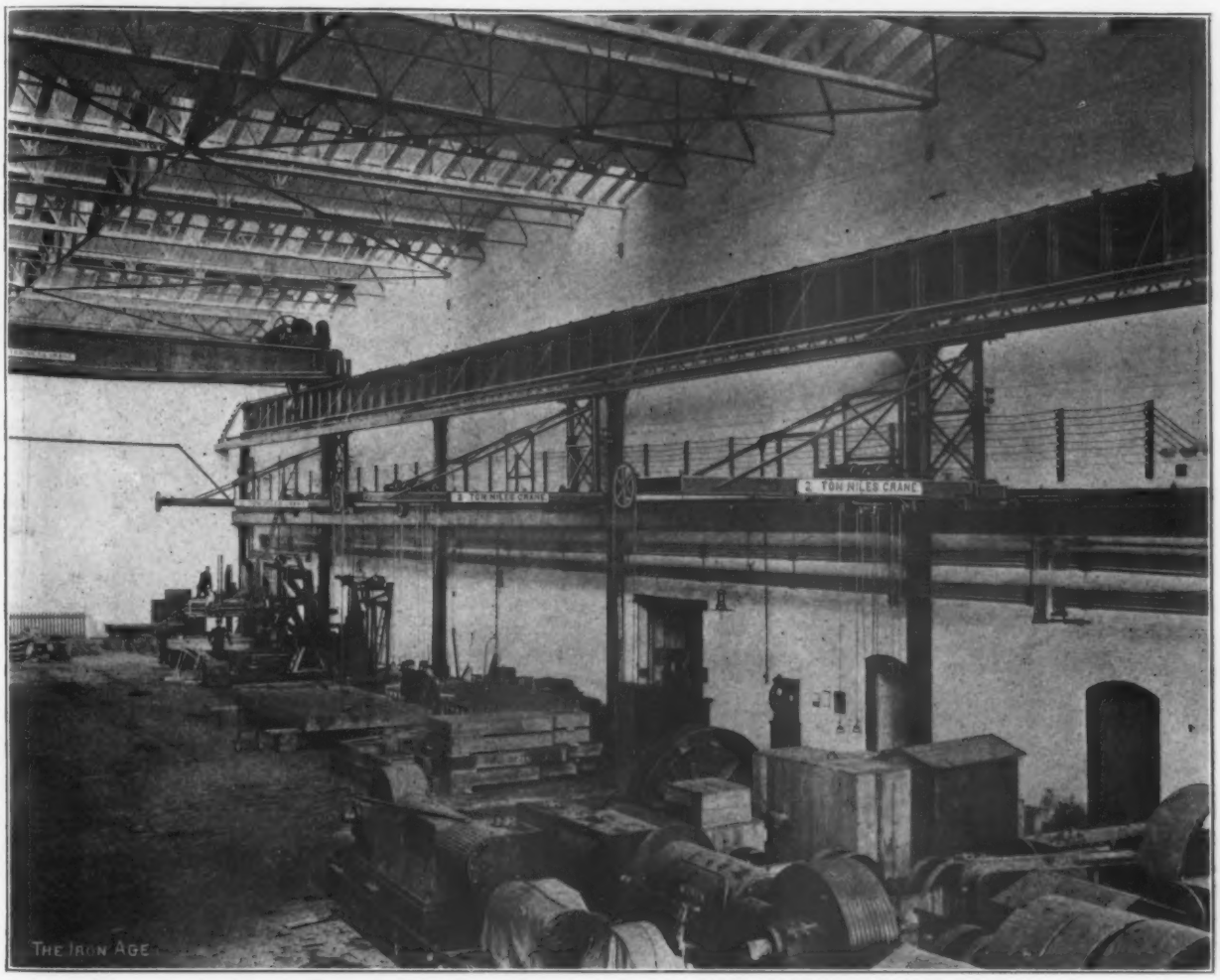


Fig. 4.—Side of Erecting Bay, Showing the Electric Traveling Wall Jib Cranes.

next three bays the machining operations are of a lighter class, and hence each is equipped with a 10-ton crane. The first bay, which is fitted out for the bench and vise work, is not in need of heavy crane service, owing to the light character of the work performed there, hence a 5-ton crane is employed.

Running along the side of the erecting floor nearest its wall and extending over a distance of almost half its length a concrete erecting pit is sunken below the floor line. It is arranged so that steel I-beams may be placed over it and the base of the machine to be erected placed on these. This enables the men to work underneath the machine as readily as above the floor.

To facilitate the work of erection a series of three 2-ton electric traveling jib cranes, shown in Fig. 4, are installed. These have been proved of great assistance to the work of erection, as they can be used for lifting the lighter parts and thus leave the main erecting crane free for heavier work. In certain operations they can also be used to excellent advantage in conjunction with the large traveler. As shown in Fig. 4 and as originally installed these jibs have their motors for hoisting only. The movement of the cranes along the wall and the forward and backward movement of the trolley are accomplished by hand. This was deemed sufficient at first, but the cranes have proved rather slow, so that arrangements are now being made for installing motor drives for all movements.

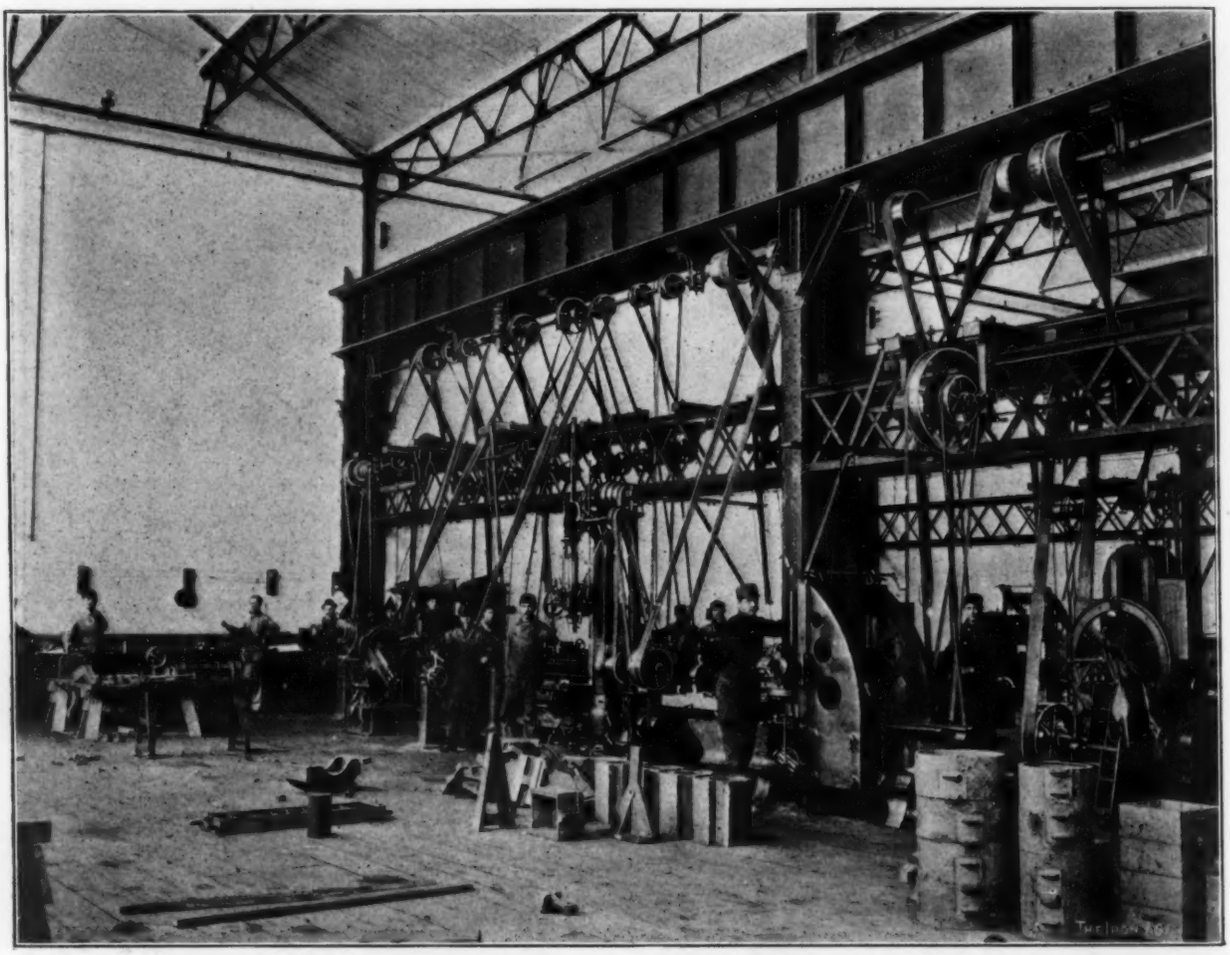


Fig. 5.—The Assembling Department, Showing the Latticed Girders Placed Between the Columns Carrying the Countershafts for the Lighter Classes of Machinery.

Latticed Girders for Countershafts.

In Fig. 5 it will be noted that between the columns on each side of machine shop bay No. 5 a system of latticed beams, or girders, built up of angle iron is placed. These it will be seen are employed for carrying the countershafts of the light machinery placed in these bays. The four lines of tools driven by these two lines of shafting comprise the only tools in the entire shop that are not driven by means of direct connected variable speed motors. At the forward end of each latticed girder, however, or at the end nearest the erecting bay, a large motor is mounted upon the girder and connected to the line of shafting hung underneath the crane girders directly above by a Renold chain. As will be seen, the power is transmitted down to the countershaft by belting and thence to the machine in a similar manner. In the cases of tools operated without countershaft the belt is run directly to the machine from the line shafting.

This is a very neat arrangement, as it permits ready access to the countershafts in case of necessity. A man can easily walk along the girder to any part of the transmission machinery that may need attention. With the motor mounted on the girder this advantage is also applicable in its case. As will be noted from Fig. 5, the countershafts are attached to the girders in a very simple manner. A pair of joists are attached to the upper members of the girder by means of simple cast iron clips, and these joists project over either side of the girder, furnishing means for bolting the hangers.

The Shop Equipment.

The heavy tools located in the other machine shop bays being all electrically driven by direct connected motors, they furnish several excellent examples of the very latest developments in variable speed motor drives. There is a large planer shown in Fig. 3, which was furnished by the Betts Machine Company, Wilmington, Del. This machine has a capacity of 122 x 122 inches x 34 feet. It is driven by a 50 horse-power motor placed upon the girt at the top of the uprights. It has two complete sets of driving pulleys, one set on each side of the machine, which are operated by one set of table dogs. Three cutting speeds are obtainable—namely, 21, 27 and 31 feet per minute—which are obtained through chain gearing and clutches also located on top of the machine. It is worthy of note that the maximum speed of 31 feet is used almost constantly. One return speed of 84 feet per minute is obtained direct from the motor.

Another important heavy machine is the Betts 10-16-

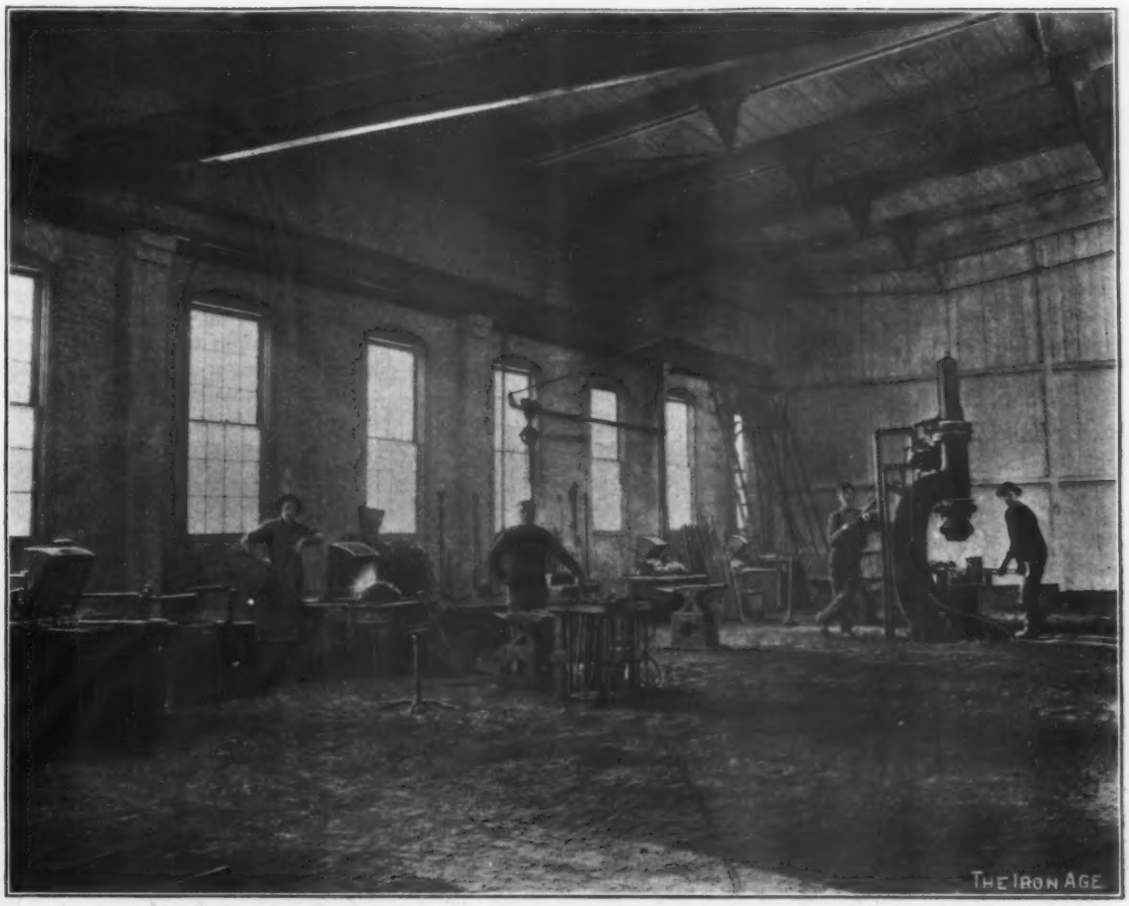


Fig. 6.—The Forge Shop.

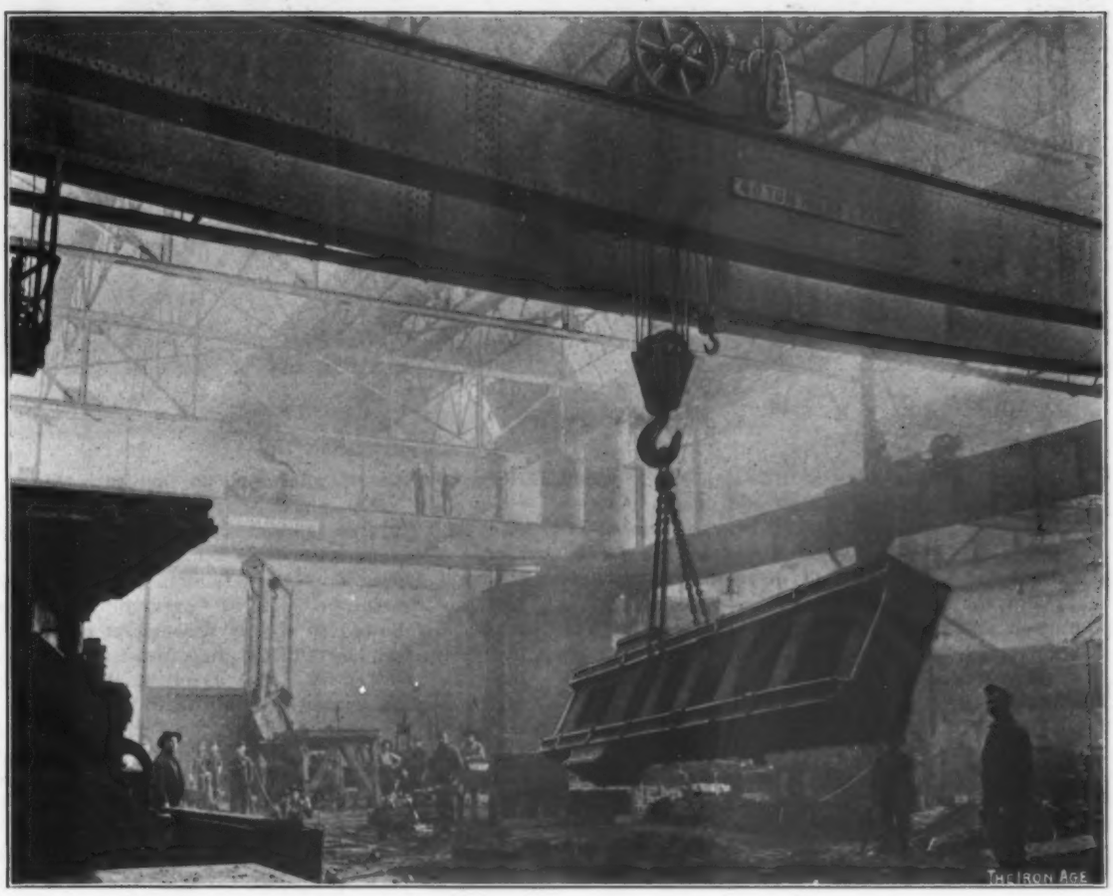


Fig. 7.—The Foundry.

foot extension boring and turning mill shown is Fig. 2. This machine has a table 108 inches in diameter, and is driven by a 10 horse-power motor, with a 5 horse-power auxiliary motor for driving the extension head. Other machines of interest are a large lathe built by the American Tool Works Company, Cincinnati, with a novel form of

variable speed motor drive, and a small Pond planer equipped with a clever motor drive designed by the Ridgway Dynamo & Engine Company.

The shop is equipped with numerous time and labor saving devices introduced by Mr. Morgan. At several of the columns at the forward ends of the machine shop bays, for instance, desks for the foreman are built, and at others cabinets and racks for tools and various crane accessories are placed. The rule of having a place for everything and having that place located where it is most convenient for the operator is followed rigidly. To facilitate the crane service and prevent the breaking of sharp edges of machined pieces by the sling chains Mr. Morgan has devised several sets of cast iron saddles having a machined groove, the sides of which are at an angle of about 90 degrees. These are made in various sizes, and when a piece is to be lifted they are placed against the sharp corners, so that the chains may be kept from coming in direct contact with the piece itself. Compressed air is piped around the entire shop, and nozzles are located at convenient places at frequent intervals about the walls and on the columns so that it may be freely used at almost any part of the shop. The electric wiring is also so arranged that connection with the system may be made at almost any point desired.

The double check toolroom system is used, but all the checks are retained in the toolroom. The equipment of gauges, jigs and templets is one of the most complete to be found in any large shop. The toolroom is also equipped with a number of special appliances of Mr. Morgan's design, which are freely used for the purpose of performing certain standard operations accurately and economically.

The Foundry.

Next in interest to the machine and erecting shops comes the foundry. This department adjoins the erecting shop, being about 150 x 112 feet in size. The same form of construction followed in the erecting shop is applied to the foundry, as is shown in Fig. 11. It is equipped with two Whiting cupolas, having a combined capacity of 30 tons per hour. One 40-ton and one 25-ton electric traveling crane serve the main molding floor. They have the unusually wide span of 75 feet, and are shown in Fig. 7. They run on 4-foot 1½-inch girders placed 21 feet above the floor. A 10-ton crane serves the coreroom, which occupies about one-third the space of the foundry. The floor of the foundry is made up of loam filled in to a depth of 4 feet. At one side of the loam floor, where the largest molds are made, a gridiron of 12-inch I-beams is firmly embedded about 4 feet underneath the surface. At frequent intervals these have eye bolts projecting upward to which the copes of the molds may be fastened by means of stout hooks. By use of a system of base plates, large green sand cores are used very extensively. Pneumatic rammers and riddles are used throughout the foundry, and to facilitate this practice compressed air is piped to each of the columns of the building. Natural gas and water are similarly piped to these stations, where electric wiring connections may also be made. Located at these columns are also racks for tools, so that the principle of "everything in its place," which is followed so rigidly throughout other parts of the plant, may be adhered to. Molding machines are used for small work. The excellent lighting facilities of the foundry cannot fail to attract attention.

Fig. 8.—The Pattern Shop.

The pressure blowers used to furnish the blast for the cupolas are direct connected to Ridgway variable speed motors. This permits the variation of the amount of pressure delivered to the cupolas, which of course is very desirable at various stages of the heat. The uniformly excellent grade of castings produced in this foundry is very noticeable. This accomplishment is due primarily to the fact that the mixtures are made entirely by chemical analysis and to the excellent system used in tabulating the exact composition of each melt.

The Forge Shop.

The blacksmith shop, an interior view of which is shown in Fig. 6, is equipped with six forges of the

Buffalo down draft type. Provisions are made for the installation of three additional forges. The blowing equipment, which is operated electrically, is located in one corner of the room, as shown in the background of Fig. 6. In addition to furnishing the blast for the forges this equipment also exhausts the smoke and gases from their hoods into the atmosphere outside of the building. The steam hammer shown in the engraving is of Wm. Sellers & Co., Incorporated, make, and owing to the distance between the forge shop and the central boiler plant and the consequent loss of steam, it is operated by

Power Plant, Piping and Heating Systems.

The power plant layout and equipment is admirable. It consists of one 150 kw. direct connected electric generator and engine built by the Ridgway Dynamo & Engine Company. This connects with a switchboard located in the engine room, from which three separate distributing circuits lead—one for the shop motors, one for cranes and the other for lighting. A single voltage system of 240 volts is employed throughout the plant.

To forestall the contingency of closing down the plant for lack of water, an ingenious system of pumping equip-

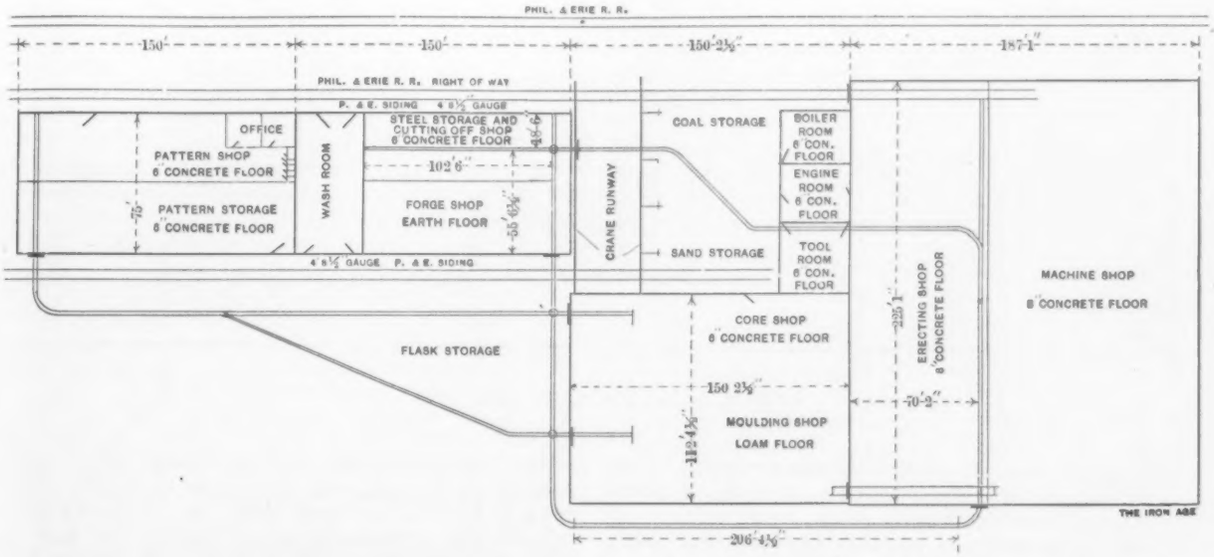


Fig. 9.—Map Showing Locations of the Buildings.

means of compressed air, although built to use steam. This is an excellent solution of an old trouble frequently encountered in the equipment of a plant. In addition to the 2-ton Whiting traveling crane, which traverses the shop, a home made jib crane is installed, as shown in the engraving.

The Pattern Shop.

A view of the pattern shop, which has an excellent equipment of wood working machinery arranged to permit the carrying of the work along in its natural sequence of operations, is presented in Fig. 8. As will be noted, the machinery is driven by line shafting, which is belted to an electric motor. This motor is located on

ment and piping is installed. This makes it possible to use the feed pumps, circulating pumps or in an emergency even the fire pumps for supplying the boilers. The fire pump and the general service pump are controlled by Mason regulator valves, and the opening of a hydrant anywhere about the plant in case of fire automatically starts the pumps. Driven wells furnish the water supply.

A noticeable feature of this plant is the uniform temperature maintained throughout all departments at all times. This is accomplished by means of piping the exhaust steam from the engine room into radiating coils hung along the shop walls, as shown under the 2-ton

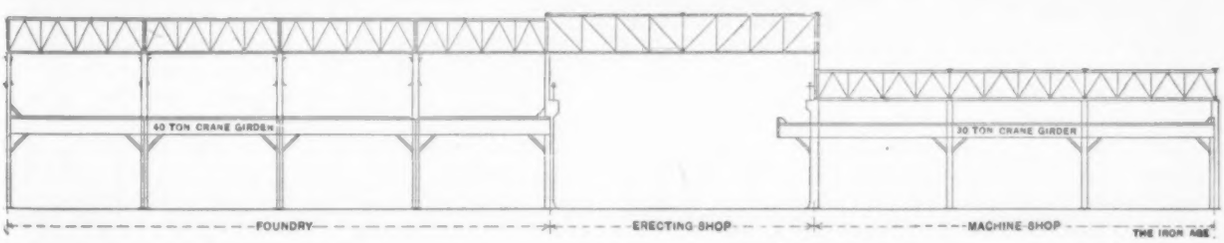


Fig. 10.—Section at South Side of Main Building, Showing the Relations of the Three Principal Departments.

top of the lumber pile, which is quite different in appearance from what is generally to be seen in pattern shops. The lumber is neatly and systematically placed in a large rack built for this purpose, and shown in the background of the engraving. This rack is constructed of heavy timbers, with iron rods running through it vertically, properly spaced, so that each board is placed on its edge in a separate compartment. The front of the rack is lettered and numbered so that each grade and size of board has its proper compartment. The drawing room is excellently equipped, having a blue printing machine and a vertical filing system for the tracings.

The Dey time clock system is used throughout the plant with very satisfactory results.

jib cranes in Fig. 4. This piping is arranged on a gravity system, which prevents condensation. This system also reduces the amount of back pressure which would ordinarily be thrown on the main engine. The system was introduced by Mr. Morgan after a thorough investigation of the subject and a comparison of costs of heating so large a shop of saw-tooth roof construction. When the writer visited the plant the temperature outdoors was at zero and the plant was uniformly heated to about 70 degrees.

The apparatus was installed entirely by the regular shop force, as was the case in all installation of equipment, such as boilers, engines and generators, pumps, air compressors, the wiring and piping, the fire hydrants

and the machine tools. This of course effected a great saving.

Special Features.

A large, well-lighted washroom is provided for the employees, and for the purpose of keeping it in good order and preparing the water which is heated by steam for the men a man is kept about the place constantly. It is equipped with expanded metal lockers. Another feature for the comfort of the men is a large dining room, where tables and chairs are furnished, as well as gas stoves for heating food, and a library consisting of machine shop journals, magazines and the popular weeklies. Also at frequent intervals throughout the plant are installed porcelain hygienic drinking fountains, so arranged as to obviate the necessity of cups, as the men may drink direct from small streams constantly bubbling upward in the center of the fountain.

The problem of securing capable help was a rather difficult one for Mr. Morgan at the outset, but he now has gathered around him a very efficient shop organization, and the men are a clean cut, intelligent corps. An excellent apprenticeship system has been devised by Mr. Morgan. A boy coming to the plant to learn the trade is placed on probation for three months. If he proves capable he is entered for an apprenticeship term of four years, against which the three months just served are credited. His pay is fixed at 7½ cents per hour for the first year, 10 cents for the second year, 12½ cents for the third and 15 cents for the fourth. At the fulfillment of the term he is given a bonus of 10 per cent. of his entire earnings during the four years of apprenticeship, which amounts to about $140.

The public spirited citizens and in fact the townspeople generally of Ridgway take a great deal of pride in the machine tool plant, and the finishing of the first tool last January was seized upon as an occasion for celebration, the people of the town visiting the plant in holiday attire. The event was marked by the distribution of souvenirs in the form of miniature anvils cast from the first heat taken from the new cupolas. These were fine examples of casting as well as appropriate mementos of the occasion.

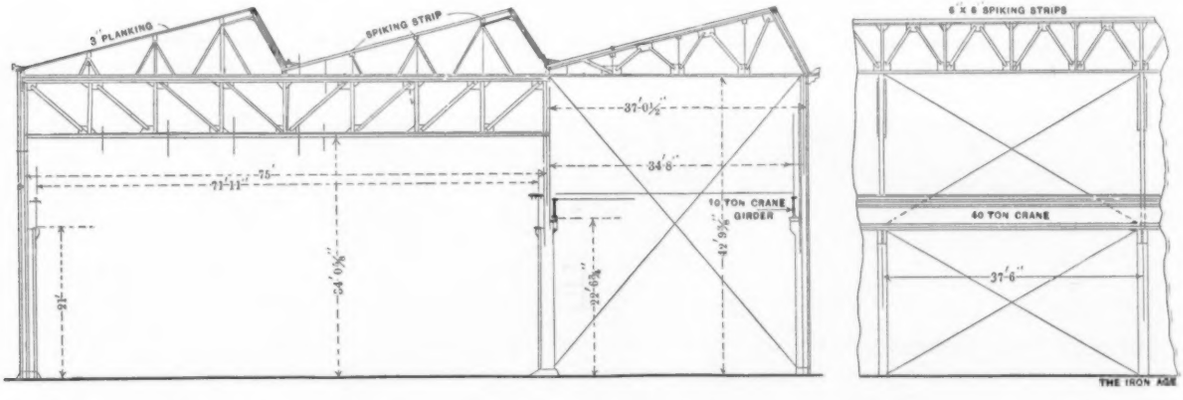


Fig. 11.—Sections of the Foundry.

John D. Hibbard and the Closed Shop.

The American Economic Association held a meeting in Chicago early in the present year at which the open shop was the main topic of discussion. John D. Hibbard, president of the John Davis Company, Chicago, and at that time also president of the Chicago Metal Trades Association, read a paper taking the employer's standpoint in favor of the open shop. Mr. Hibbard's paper was an able presentation of the subject, but was not available for reproduction at that time. It has now been printed in the *Open Shop*, Cincinnati, appearing in the March issue. As a specimen of Mr. Hibbard's strong array of facts against the closed shop and its tendency to the shirking of work the following extract will be read with interest:

"A strike was ordered in the shops of the members of the Chicago Metal Trades Association, involving some 1400 employees of a certain craft, who, for the most part, were presumably skilled in the particular work they were performing. This work varied materially in the different shops, as the association embraced manufacturers of printing presses, heavy conveying machinery, sewing machines, machine tools, steam valves, ice, can, and mill and mining machinery, as well as many others. Almost immediately after the strike had been declared these shops were filled with an equal number of employees, from all parts of the country, few of whom had ever been engaged in the work now set before them. I am within the bounds of truth when I state that inside of three months, with the same working hours per day, the output of these green hands equaled or exceeded that of those who had held the positions many years."

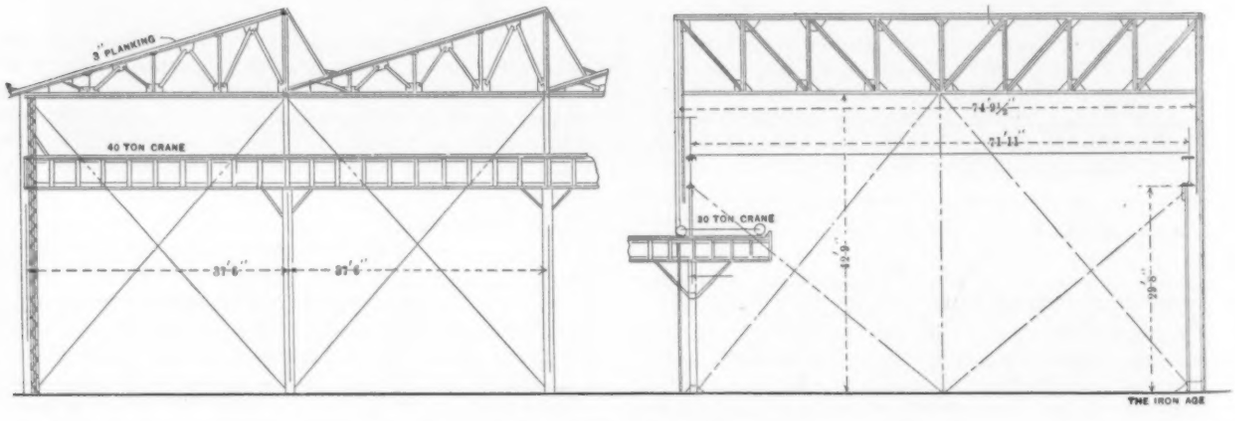


Fig. 12.—Sections of the Erecting Shop.

The Chicago Metal Trades Superintendents' and Foremen's Club.*

BY F. S. NORTH, CHICAGO.

During the recent strike of the Machinists' Union against 33 members of the Chicago Metal Trades Association, several among whom were also members of the National Association, one of the greatest difficulties encountered by the manufacturers in their attempts to reorganize the shops with nonunion men was the widespread disloyalty not only of the foremen, but, incredible as it may seem, of the superintendents also.

With the assistance of the efficient employment bureau opened by the National Association soon after the strike began, together with the aid of the local bureau, it was a comparatively easy matter to fill the struck shops in a short time with an average lot of machinists, but it soon became apparent that there was a leak somewhere which was not due to the activity of the union pickets or wrecking crews. These gentry, while fully sustaining the well earned reputation of the Machinists' Union for brutality and lawlessness, were not the chief cause of the rapid exodus of the new men from many of the shops that was going on. A careful investigation by the Strike Committee through its special agents soon made it clear that a number of the superintendents and foremen were discharging nonunionists wholesale and without cause, and generally showing a strange antipathy toward the new comers, instead of heartily seconding their executive officers' efforts to organize an efficient working force out of this new material.

Superintendents and Foremen Helped the Union.

It also appeared that a majority of these superintendents and foremen were formerly members of the union and now held withdrawal cards which required them to act according to the instructions of the union, although they were not active members. In time of peace the union expects foremen holding withdrawal cards to act as employment agents for union men out of work, and whether capable or not to give them jobs when possible. Thus the employer becomes unknowingly a great aid to the union, keeping employed at good wages the incompetent and undesirable workmen whom honest foremen or superintendents will not tolerate in their shops. When a strike is declared against the shop employing one of these union foremen he is expected to further the union's interests by all means in his power.

The course pursued by foremen of this stamp in the metal trades strike was to discourage the new men in every way possible until they quit of their own accord, or when opportunity offered to discharge them outright and so neutralize their employers' efforts to fill the shop. This occurred not in isolated cases but generally. In one of the largest shops not only were the majority of the department foremen daily betraying their employers, but even the general foreman was lukewarm, to put it mildly, in his attempts to get results from the new men. To make matters worse, it was impossible to convince the firm that "Harry" or "Bill" could be capable of doing anything of this kind. "Why," they would say, "Bill has been with the firm 18 years. We taught him his trade; he has steadily risen in the shop until to-day he is one of our most trusted men. What you say is impossible!" And all the time "Bill" was making it so hot for the new men in a quiet way that there was a constant succession of them quitting the shop every day disgusted with their treatment. Once outside they were received with open arms by the pickets, who either paid their fare out of town or promised them strike benefits if they joined the strikers. Then all the weary work of filling their places in the shop had to be done over again.

With these facts and many others before them, still some of the employers could not be convinced, and it was necessary in a few cases to refuse to supply them with any more men before they would get rid of these trusted lieutenants—their most dangerous enemies.

The Remedial Steps Taken.

When the full extent of this state of affairs was finally realized, which took some time with so many of the employers blind as they were to what was going on in their own shops, steps were taken at once to meet the situation. It was believed that many of these superintendents and foremen through years of union teaching had come to lose sight of the inherent dishonesty of these practices, and that if they once had an opportunity of having the facts presented to them in their true light there would soon be a radical change in their attitude.

To this end a meeting of the superintendents and foremen of all the metal trades shops belonging to both the national and local associations was held at the Sherman House on June 7, 1904, which was attended by 62 superintendents and foremen, and also by many of the employers. The meeting was preceded by a dinner at which good fellowship among all present was promoted by extensive introductions, the employers acting as hosts. After dinner addresses were made by the national commissioner, the secretaries of both associations and several others bearing on the question of a superintendent's or foreman's true position, and emphasizing the fact that he should be the personal representative of his employer and not of the union; that he is employed not primarily to secure raises in pay for his men, but to get results from these men. Many of the foremen had never heard the matter put in this light before and it set them thinking.

Good results from this meeting were soon noticed. Many of the foremen frankly stated that they had never before really understood what a foreman's whole duty was; that they had heard only the other side before. Four foremen surrendered their union cards to the metal trades secretary and resigned from the union shortly after, and later others resigned and tore up their cards. The chief business agent of the Machinists' Union was reported to have said that these foremen's meetings had cost his union over 30 members by resignation of foremen and those of the rank and file influenced by them. No higher tribute could be paid to the effectiveness of these meetings than this, coming as it did from the other side.

These foremen and superintendents soon began to adopt a different attitude toward the new men, and joined heartily in the work of creating a new working force in their shops. The incorrigibles were finally discharged or shifted to departments where they gave no trouble, their places being filled by some very competent men secured for the greater part by the National Association's officers. In this connection it is but fair to state that a large number of the superintendents and foremen remained loyal and efficient throughout the strike and were invaluable to their companies. They formed the backbone of the Foremen's Club from the beginning. The foregoing remarks do not apply to them in the remotest degree.

During the summer frequent meetings were held, and as conditions in the struck shops gradually became more settled the labor side of superintendents' and foremen's work appeared less prominently in the discussions and technical matters were taken up. A well-known milling machine company was induced to send one of its experts to demonstrate a variety of exhibits, including high speed steel cutters, special fixtures and examples of high speed milling. Other subjects of a similar nature were discussed at different meetings, various members contributing papers. It was not long before a general sentiment arose among the superintendents and foremen to secure permanent organization. Accordingly on December 17, 1904, the Metal Trades Superintendents' and Foremen's Club was formerly organized with a full list of officers.

In conclusion, it may safely be said that without the hearty co-operation of the superintendents and foremen it would have been practically impossible to have brought the struck shops into their present satisfactory condition, and this co-operation is largely due to the beneficial influence of the Superintendents' and Foremen's Club in increasing the loyalty and efficiency of its members.

* Read before the National Metal Trades Association, Chicago, March 23.

The Ridgway Boring and Turning Mill.

A boring mill which is typical of the character of product to be brought out by the Ridgway Machine Tool Company, Ridgway, Pa., was the first tool to be produced by this new company. It is a machine built essentially for high duty, and is designed and constructed to meet every requirement of the present day cry for rapid production, as it utilizes to their fullest capacity the modern high duty tool steels. The massive proportions and the structural features which impart to it greatest rigidity are plainly shown by the accompanying illustrations. The machine was built with a view of combining the very highest degree of rapidity with accuracy, and the results at the works of its purchase, where it was shipped several weeks ago, stamp it as a complete success.

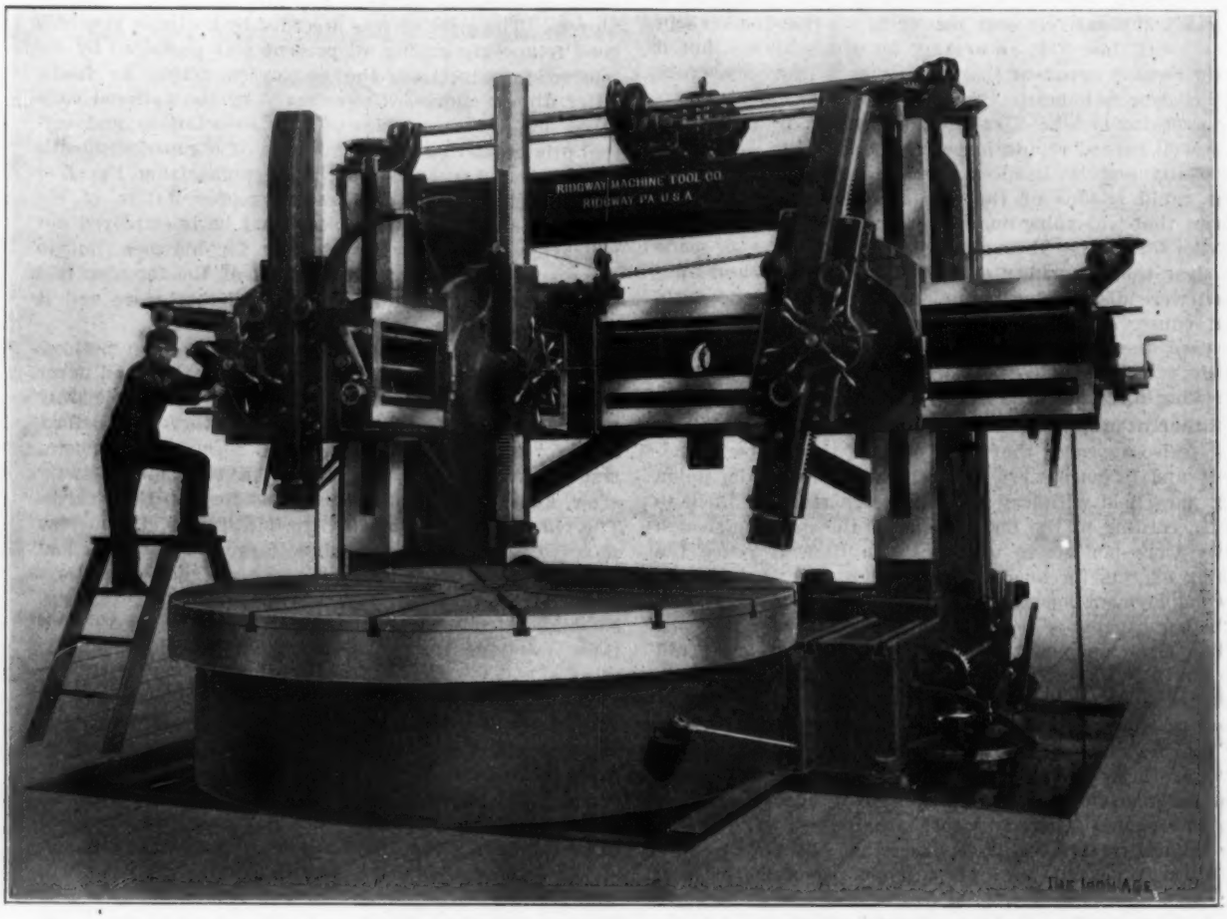


Fig. 1.—Front View of the Machine, with Extension Arm and Boring Bar in Place.

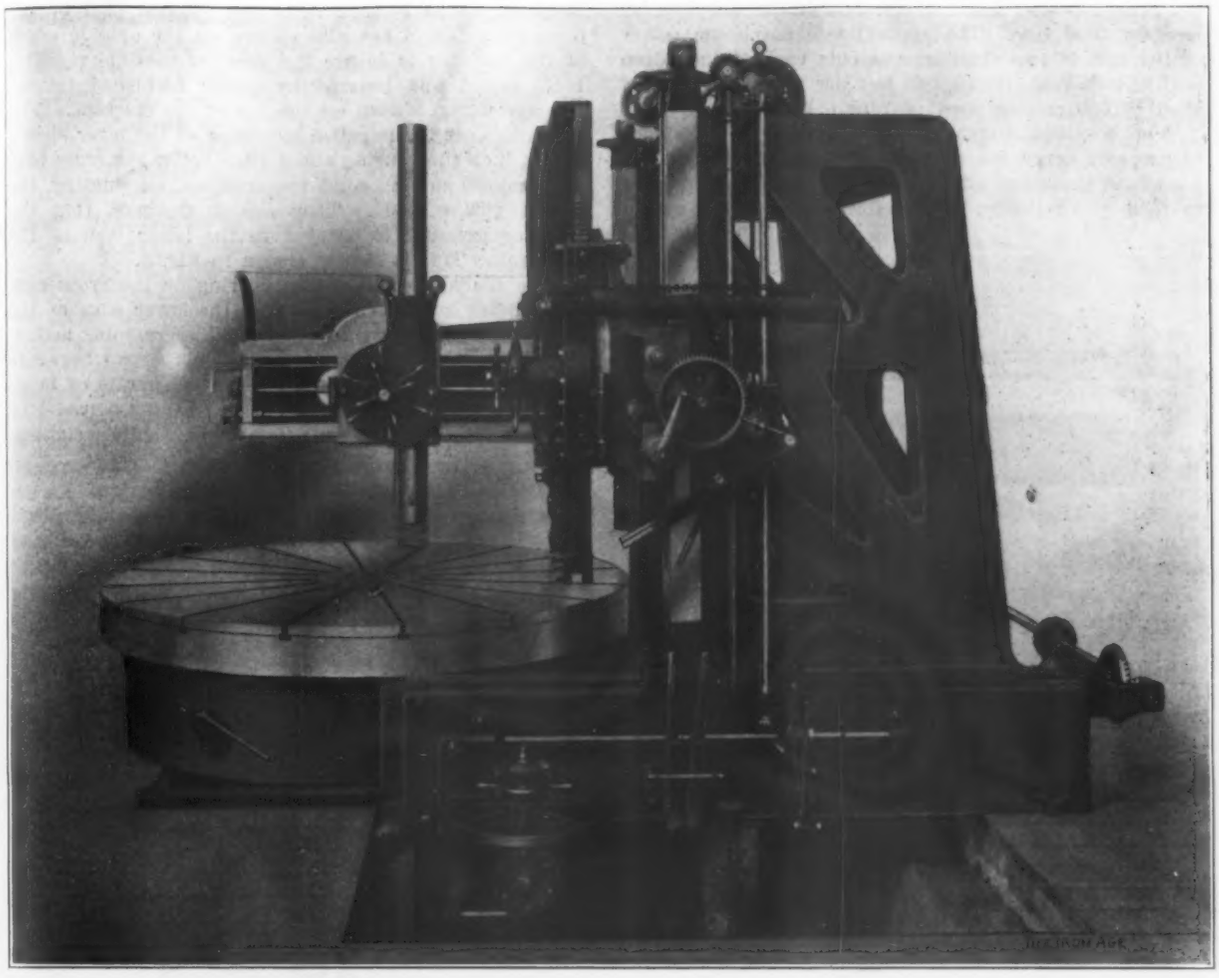
As will be noted from the engravings, the mill is of the extension type. Its swing with the upright in the forward position, as shown in Fig. 3, is 10 feet 8 inches, while with the housings moved backward to their extreme position, as shown in Figs. 1 and 2, the machine has a swing capacity of 16 feet 4 inches. The greatest hight over the table is 5 feet 2 inches to the bottom of the tool holder and 5 feet 10 inches to the cross rail. The bed, which is of box form throughout, is 23 inches deep, and the table is 10 feet in diameter, 10 inches deep at the edge and 13 inches deep in the center. It is supported on a circular track of large diameter and wide face, which is so constructed that the bearing surface is immersed in oil. The spindle is carried in two bearings, which are placed wide apart to insure stability. Each bearing is fitted with a split taper bushing for taking up wear. A foot step is provided at the lower end of the spindle for raising the table off the circular track when it is desired to operate the mill at high speeds. The raising and lowering of the table are performed by means of the wrench shown directly under the table in Fig. 1. This it will be noted is in a very convenient position, making it possible for the operator to quickly change the machine as desired for either rapid or slow feeds. The table driving gear ring is cut in high carbon rolled steel.

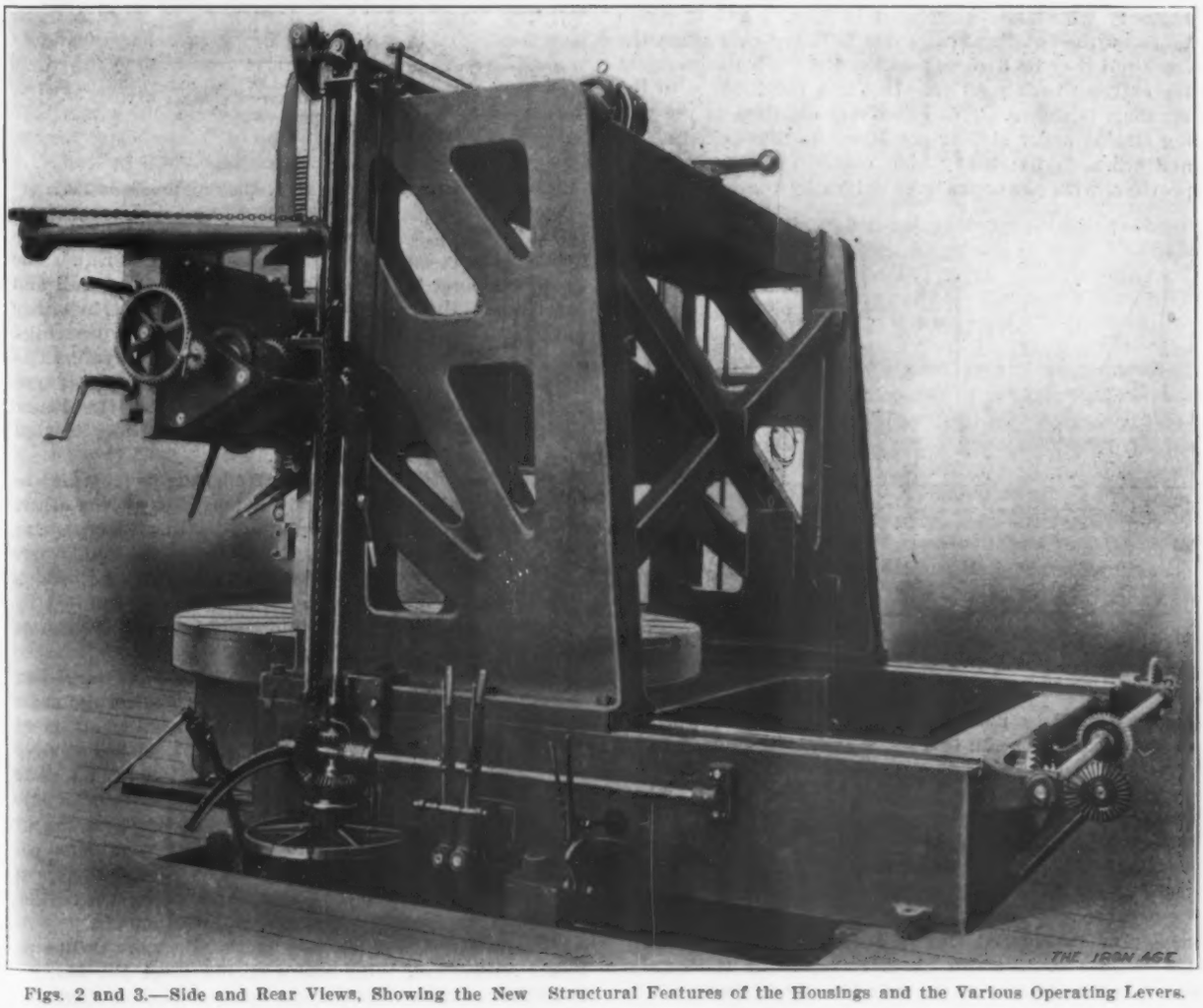
The structural features of the machine which are most apparent give it rigidity to stand up under any strain that may be placed upon it, but with all this massiveness of design the machine is not unwieldy. On the other hand, it is so ingeniously fitted with power movements and controlling apparatus located at the proper place that the manipulation of all movements is most easily and quickly accomplished. All of the principal movements, including those on the extension bar, have rapid power traverse.

The machine is driven by a 30 horse-power variable speed motor of 4 to 1 range, having 10 speeds. By means of mechanical changes 30 table speeds are obtainable in correct geometrical progression, ranging from a maximum of 18.75 revolutions per minute, equaling 25 feet on 6 inches diameter, to a minimum of 0.32 revolution per minute, equaling 16 feet on 16 feet diameter.

All of the speed changes are made by means of two parallel vertical levers, shown on the side of the mill in all the illustrations, but more plainly in Figs. 2 and 3. These it will be noted are in a very handy position for the operator. They are made interlocking by a very clever device. It will be observed that they move parallel with the bed, and each half has a latch lever which moves a latch pin running through the main lever and entering a hole in the casting behind it or into a groove in the round sliding bar, shown in front of the levers. When one of the pins is brought forward into one of the grooves in the sliding bar its lever is free to move, but any movement of the lever will move the sliding bar which carries the other groove past its pin so that the other lever must remain locked. The right hand lever has three locking positions, while the one at the left has two. With the interlocking device, however, it is impossible to move either one of the levers with the other displaced from its neutral position.

The driving motor clutches and speed changing gear-





Figs. 2 and 3.—Side and Rear Views, Showing the New Structural Features of the Housings and the Various Operating Levers.

ing are all placed inside of the bed of the machine below the floor line. The approximate maximum power of the mill is two simultaneous cuts each ½ inch deep with ⅛-inch feed, running 40 feet per minute in steel of about 80,000 pounds tensile strength.

The housings, which are of box form, are designed to properly carry the stresses imposed, and in practice have been proved to afford the great stiffness calculated to them theoretically. Their form permits the use of

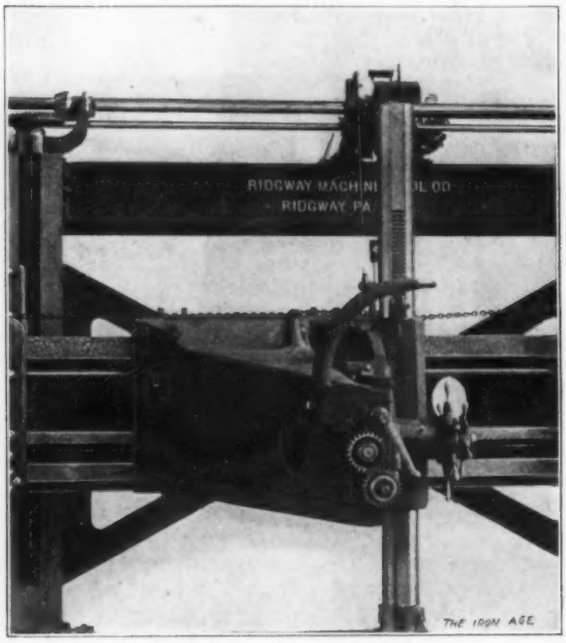


Fig. 4.—View of the Extension Boring Arm, Showing Wide Bearing Surface on Cross Rail.

the very wide top shelf shown in Figs. 2 and 3, which takes up the twisting strain due to heavy cuts when the cross rail is at its highest position and the housings are in the extreme back position. In Fig 3 the X-brace to the housings is shown. This effectively counteracts the tilting strains under similar conditions to those cited above and when taking heavy side cuts. The housings are provided with power traverse driven by the main motor,

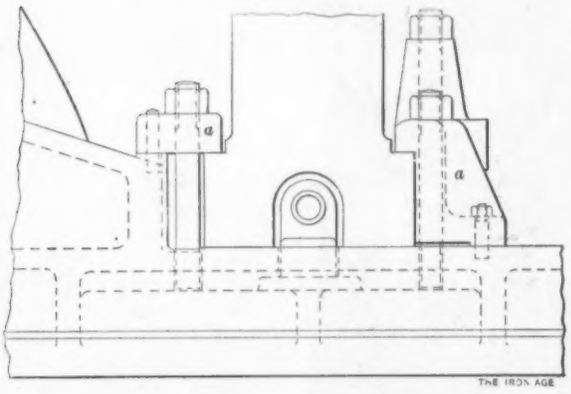


Fig. 5.—Method of Clamping the Cross Rail to the Housing.

and controlled by means of the right hand lever, shown at the base of the mill in Figs. 2 and 3. A pair of faced pieces, properly marked with center lines, is provided at the front of the housings and base, which, when brought together exactly, bring the center of the tool holder exactly over the center of the table.

The cross rail is 31 inches deep and 8 inches thick in front of the housings, increasing to 22 inches from face to back in the center. It is held to the housings by means of the special clamps on the inside edges *a a*, shown in Fig. 5, which avoid transmitting the strains through the sections of the rail directly in front of the housings, which is necessarily the weakest part of the cross rail. There are also clamps on the outside edges of the uprights to insure the greatest possible rigidity. It is raised and lowered by power furnished by the traverse motor, shown on the top of the machine. The elevating gear is controlled by means of the lever shown in Fig. 3 on the housing and a little below the cross rail. The saddles are of solid construction, eliminating the use of gibs entirely. They are so designed that the point of pressure is brought to the lower web of the cross rail. This is clearly shown in Fig. 6.

The heads have 34 inches bearing on the cross rail. The guiding surfaces are both on the lower edge of the cross rail. This greatly diminishes the cramping action, due to the taking of heavy cuts when the two bars are extended below the cross rail. The tool bar is of large box section, 7 feet 6 inches long and having a travel of 4 feet 1 inch. Each bar is separately counterweighted,

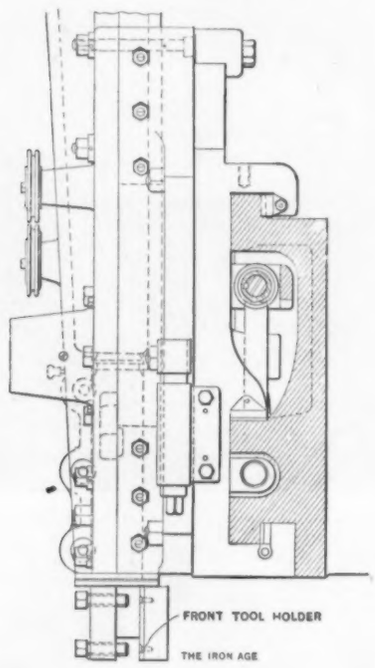


Fig. 6.—Cross Section of the Rail, Showing the Solid Form of Saddle.

one weight being on each end of the cross rail. The overhead motor traverses the heads of the cross rail and the bars in the heads, independent movement in either direction being obtainable by means of the two parallel levers shown projecting underneath the cross rail. The outer one of these levers controls the feed while the inner one manipulates the rapid traverse of the heads. These cross rail levers are in duplicate, being located on each side of the cross rail.

Each head has 12 changes of feed, ranging from zero to 2½ inches, and each is entirely independent of the other. The machine is designed to be built with either positive or friction feed, as desired. The purchaser of this particular machine expressly desired a friction feed, which is plainly shown in Fig. 2. This feed is controlled by means of the lever moving on a projecting arm, shown near the friction disk in Fig. 3.

The arm carrying the extension head is of large box section. It has the unusually wide bearing on the cross rail of 4 feet. This is illustrated in Fig. 4. It is of proper length so that the center of the tool bar is over the center of the table when the uprights are in their extreme backward position, but as it carries a saddle arranged with power feed it is capable of operating at any part of a piece of work within the maximum capacity of the machine—16 feet. The saddle carries a swivel which permits the boring of a taper hole. The weight of the machine is about 102,000 pounds.

The machine was shipped to the Bucyrus Company, South Milwaukee, Wis., where upon arrival Mr. Morgan conducted a series of tests as to its capacity. The fol-

lowing results were attained: The specifications called for 2 cuts ½-inch deep taken simultaneously on high tensile steel at the cutting speed of 40 feet per minute, 1-16 feed on 10-foot diameter work. The machine not only fulfilled this test but stood up under cuts ranging from ½ to over 1 inch deep on an irregular steel casting at 3-16-inch feed at a cutting speed of 50 feet per minute, developing twice the rated capacity of the motor and maintaining this speed without any ill effects. It was found that few if any of the steels tried would stand long at this high rate of speed, proving the machine fully equal to the modern high speed steels. The chips resulting from this performance constitute one of the most remarkable collections of their kind.

A noteworthy feature of this machine is that it was ordered from rough sketches, and the plant had not yet been placed in operation or a casting made. From that date until the delivery of the mill only seven months elapsed, which reflects great credit on Lewis H. Morgan, the superintendent and manager of the Ridgway Company, who together with F. B. Cockburn, chief engineer, designed and produced the machine complete in so short a space of time and simultaneously organized and equipped the shop in which it was built.

A New Air Hardening Tool Steel.

Notwithstanding the continuous experiments at present being made with rapid cutting tool steel, it would seem as if not enough attention had been given to the intermediate quality, which, after all, the majority of machinery owners can utilize to the best advantage in the present circumstances. It may safely be assumed that of all the tool machinery on the world's market not yet 2 per cent. is designed for actual high speed working. So much has been written, however, and so much interest awakened about the achievements in running at increased speeds, cuts and feeds that the owners of even the smallest workshops have been seized with the spirit and want somehow to put their existing machinery on its mettle and endeavor to get more work out of it than formerly. This feeling to a large extent has led to the increased use of the old type of self hardening steel similar in nature to the original Mushet brand, which in many cases has nearly met the maximum capacity of the machines of current types.

A new steel has been invented and is now being put on the market by the Sheffield Steelmakers, Limited, Sheffield, England, the characteristics of which are exceptionally interesting to users. This metal is styled by the makers Unor universal air hardening steel. Its wearing and speed capacity is warranted to be about half way between the best high speed and the old type of self hardening steel. It will do quite as well for roughing as for finishing. The treatment required to form this steel into tools appears to have established a record for simplicity. These points combined should tend to render Unor steel an ideal tool material for users eager to make the most of their existing machinery.

Some of the features in its favor over other sorts of air hardening steel appear to be that for hardening it is only necessary to heat it to a bright red, then allow it to cool naturally in the air, to be ready for use, whereas most other kinds of air hardening steel require the use of a cold blast for cooling after being heated to white or fusing point, invariably destroying the fine cutting edges of the tool and necessitating subsequent excessive grinding. This steel is sent out in the annealed bars by the manufacturers, so that it can be readily machined and tooled.

The nature of the Unor steel seems to differ entirely from the other air hardening steels, and that it possesses properties quite opposite to them is shown by the curious way in which it can be reannealed after hardening. The makers state that to effect this it is only necessary to heat the article to a cherry red, then hold it over the flame of the fire till it becomes dark red, then plunge it into water. This will soften it to perfection. Under such treatment ordinary tool steel would harden and self hardening steel would crack. This may be phenomenal to tool makers, but with this peculiar steel, it is claimed, the whole art of tool making is simplified to such an extent that it can almost be handled by unskilled labor.

The makers of this steel appear determined to put it quickly before the engineering world, for arrangements have been made to manufacture it in large quantities. The price they ask for it, 18 cents per pound, delivered anywhere in America, appears very modest for the claims made.

In tests made with twist drills of Unor steel at the Sheffield Testing Works on a railroad tire made of Cammell's steel of 0.49 per cent. carbon, 49 holes, each 15-32 inch in diameter and 1⅞ inches deep, were drilled at an average speed of 25 seconds each. A 13-16-inch drill made from this steel drilled 20 holes 2 inches deep in 16½ minutes. In both cases the tool used was left in good condition.

The Production of Rails in 1904.

The American Iron and Steel Association publishes the following rail statistics:

The production of all kinds of rails in the United States in 1904 amounted to 2,284,711 gross tons, against 2,992,477 tons in 1903, a decrease of 707,766 tons, or 23.6 per cent. In the following table the production of all kinds of rails in 1904 is given by States:

Gross tons.	Bessemer.	Open hearth.	Iron.	Total.
Pennsylvania	801,657	20,451	...	822,108
Other States	1,336,300	125,432	871	1,462,603
Totals	2,137,957	145,883	871	2,284,711

The production of Bessemer steel rails in 1904 amounted to 2,137,957 gross tons, against 2,946,756 tons in 1903, a decrease of 808,799 tons, or over 27.4 per cent. In the following table the production of Bessemer steel rails is given by States from 1901 to 1904: rails rolled from purchased blooms, crop ends and "seconds" and rerolled or renewed rails being included:

Gross tons.	1901.	1902.	1903.	1904.
Pennsylvania	1,406,008	1,148,425	1,186,284	801,657
Other States	1,464,808	1,786,967	1,760,472	1,336,300
Totals	2,870,816	2,935,392	2,946,756	2,137,957

The total production of open hearth steel rails in 1904 was 145,883 tons, against 45,054 tons in 1903, 6029 tons in 1902, 2093 tons in 1901, and 1333 tons in 1900. Alabama rolled almost all the open hearth rails that were rolled in 1904, Pennsylvania and Colorado rolling the remainder. Over 116,000 tons of the open hearth rails rolled in 1904 weighed between 45 and 85 pounds per yard and over 8000 tons weighed 85 pounds or over. The remainder weighed less than 45 pounds.

The production of iron rails in 1904 was 871 tons, all rolled in Tennessee and Alabama, and all weighing less than 45 pounds to the yard.

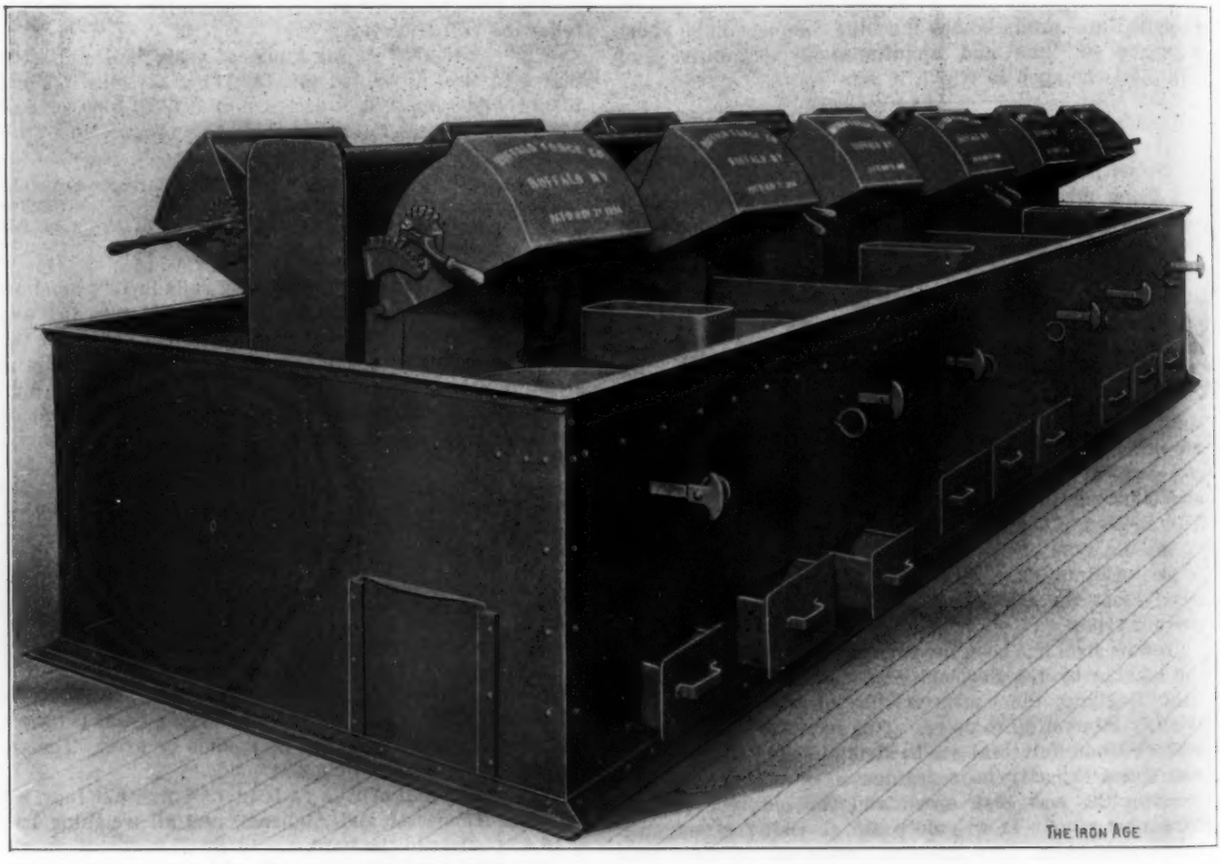
The total production in 1904 of rails weighing under 45 pounds to the yard amounted to 291,883 tons; of rails weighing 45 pounds and less than 85 pounds, 1,320,677 tons, and of rails weighing 85 pounds and over, 672,151 tons.

The production of rails weighing under 45 pounds to the yard shows an increase of 70,621 tons in 1904, as compared with 1903, but the production of rails weighing 45 pounds and less than 85 pounds shows a decrease of 282,411 tons as compared with 1903. The great falling off in rails in 1904 as compared with 1903 was, however, in sections weighing 85 pounds and over, in which the decrease amounted to 495,976 tons.

At the annual election of the Chicago Metal Trades Association, held March 15, the following officers and Executive Committee were elected for the ensuing year: President, H. H. Latham, Latham Machinery Company; vice-president, F. S. North, Union Special Machine Company; treasurer, John W. O'Leary, J. W. O'Leary & Son Company. Executive Committee—F. K. Copeland, Sullivan Machinery Company; John D. Hibbard, John Davis Company; T. A. Jones, W. A. Jones Foundry & Machine Company, and R. W. Young, Weir & Craig Mfg. Company. Paul Blatchford, 1610 Ashland Block, Chicago, is secretary.

A Multiple Buffalo Forge for the University of Illinois.

A novel forge equipment was recently constructed for the University of Illinois by the Buffalo Forge Company, Buffalo, N. Y., which contains 12 separate fires. These with their blast gates and down draft hoods have been assembled in one sheet steel casing, making it possible to dispense with separate blast and exhaust connections required for individual forges, and to save a considerable amount of space, which is important in a training school smithy. For instructing purposes this forge is peculiarly well adapted, as the instructor from any one point can be heard by all the students and at the same time he has them all under his eye to observe their mistakes. The only disadvantage which, however, is not serious in connection with work of the character done in a manual training course is that there is not the down draft system removes the smoke from the heaviest fires of forges, muffles or heating furnaces, and dispenses with overhead pipes, which are objectionable on account of obstructing light. This set does not require a separate building, but may be installed as part of another department.



The Twelve-Fire Forge Set Built for the University of Illinois by the Buffalo Forge Company.

freedom in the range of work and the flexibility which an independent forge affords. The compactness of the outfit is the specially desirable feature which more than outweighs any disadvantage. On account of its rectangular shape it may be favorably disposed in a room of comparatively small dimensions.

The set is 15½ feet long by 5 feet wide and is 4½ feet high. Each fire is supplied with a Buffalo patent adjustable down draft and exhaust head, clinker freeing tuyere and a blast regulating gate. Beside each fire pot is a sheet iron water tank, and immediately beneath a sheet metal drawer to hold the coal supply. Smaller drawers, of which there is one for each fire, are placed directly under the tuyeres to catch the ashes. At one end of the set there is a sliding door to allow access to the interior. In this and other details attention has been given to insuring that the forges may be kept clean and neat under actual working conditions.

While this forge is not suitable for general forge shop practice, it illustrates the adaptability and convenience of the down draft system, and an interesting manner in which unusual conditions and practical requirements have been satisfactorily combined. The

Pacific Coast Trade Conditions.

SAN FRANCISCO, CAL., March 18, 1905.—The past fortnight has been notable in two respects—for the abundant rains which came just at the proper moment to save the crops, and for the heavy shipments to the Orient, which included iron, steel and manufactured products intended chiefly for the use of the Japanese Government. All fear for the crops has passed, and the yield of wheat, barley and other cereals and vegetables is expected to be among the largest in the history of the State. It is claimed that some damage has been done to fruit, but the storm has in most cases simply done the thinning that would have to be done at a later date by the orchardists. Adding to these indications of a bountiful harvest insuring a good business later on, we may instance the unusually large exchanges of the clearing house, which for some weeks past have averaged $5,000,000 to $7,000,000 in excess of those for the same time last year, indicating the operations of a great amount of Eastern and foreign capital in our various industries. Owing to the interruption caused by the storm, business has not been as brisk as it otherwise would have been, but in hardware and metals it has been good for this season of the year.

Although it cannot be considered that the volume of exports to the Orient contingent on the war will continue at the same rate after its close, it is at the same time hard to believe that it will fall back to what it was before the war started. The ravages caused by the operations of the belligerents will have to be repaired, and this will cause the large export trade to last for quite a period after the cessation of hosilities. The week ending March 11 was in this respect a record week, the total of the shipments to China, Japan, &c., being in round numbers

$2,500,000. Of this nearly $2,000,000 was intended for Japan, the shipments being made up principally of cotton from Texas and leather from California.

The exports of machinery, &c., were especially large. The Inverness, which cleared on March 6, had steel bars, 1,165,799 pounds, valued at $90,350. The Algoa cleared on the same date with a cargo valued at nearly $1,000,000, of which machinery was valued at $179,590. The Siberia had machinery valued at $15,000; 370,788 pounds of spikes, $15,000; sewing machines, $7500; bicycles, over $1000; steel bars, $3964, and steel wire, $2100. Altogether, these exports made a total of about $320,000 for the week. Add to this the shipments of machinery, hardware and pipe to the Hawaiian Islands, Mexico and Central America in the past fortnight and it will be seen that this branch of trade has given a good account of itself indeed. It may be added that these exports to Japan, especially in the matter of machinery, seem to be increasing with every steamer. To-day the Mongolia is clearing with an immense cargo. J. O. L.

The Colorado Fuel Financial Arrangement.

On behalf of the Readjustment Committee of the Colorado Fuel & Iron Company and the syndicate which has underwritten the committee's new financial plan, Blair & Co., bankers, New York, announce that subscriptions will be received on or before April 13 from stockholders of record April 3 for a portion of the $45,000,000 bond issue of the Colorado Industrial Company. The latter corporation has acquired title to the property which the Colorado Fuel & Iron Company sold in 1903 to obtain working capital and has become a subsidiary of the latter, which has acquired all of its stock.

Of the $45,000,000 bonds of the Industrial Company, $17,000,000 have been devoted to furnishing approximately $13,600,000 cash for the repurchase of the properties sold to individuals to furnish additional working capital, while $14,000,000 more are appropriated for the retirement, dollar for dollar, of the old debentures, of which about $12,500,000 have already been exchanged. The parent company, besides guaranteeing the $45,000,000 bonds of the subsidiary company, issues an additional $6,200,000 of its own stock, of which $2,800,000 is part consideration for the exchange of the old debentures for the new, and the remainder is given as bonus with the new bonds which are to be sold to stockholders.

Stockholders of the Colorado Fuel & Iron Company are offered the privilege of subscribing to the new bonds at the price of $800 for each $1000 bond and $200 in new stock. For every 100 shares of stock held the subscriber will be entitled to subscribe to $6558, par value, in bonds and $1311 in stock, paying for both $5247 in cash, including interest from February 1, 1905.

The parent company has acquired all the capital stock of the Industrial Company. In order to enable the latter to get the properties in question the parent company issued to it $3,400,000 of its own stock and guaranteed its bonds, $17,000,000 of which, together with this stock, passed to the syndicate of which James A. Blair is the head, and are now offered for subscription to stockholders. Subscriptions must be made for not less than $1000 bonds, and the interest addition will be at the rate of 5 per cent., the rate which the bonds pay, from February 1 to April 13.

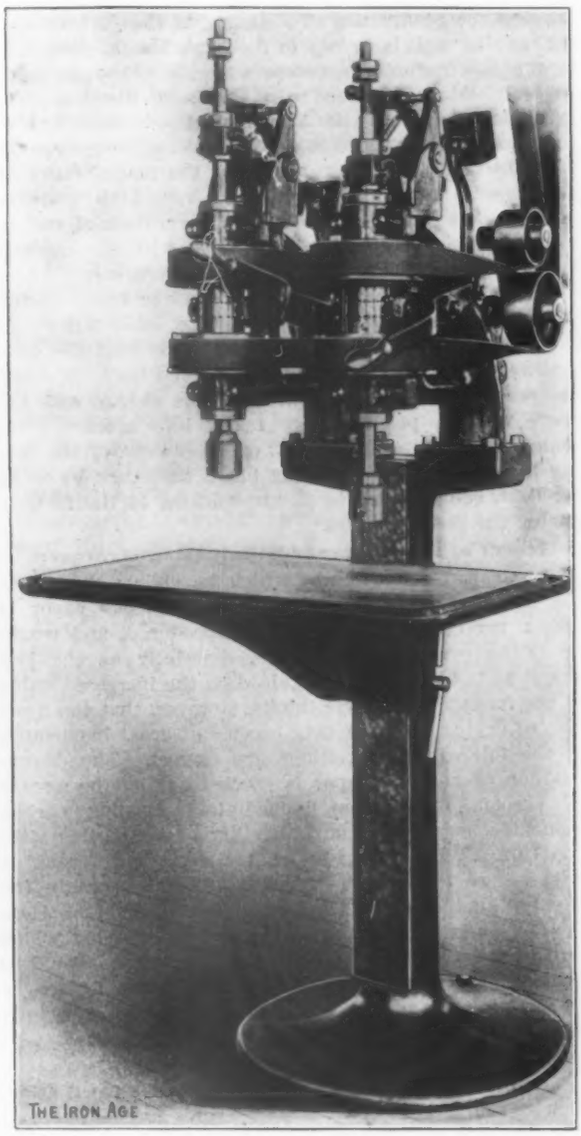
The properties which the company sold during the summer of 1903 were coal and ore lands, and the official acknowledgment of the sale was preceded by great weakness in the stock on the market, with accompanying rumors of a receivership. Officials of the company issued a statement and call for a special meeting, in which it was explained that the sales had been necessitated by lack of capital to carry out projected improvements and development work. They had been made, it was said, with the stipulation that the properties might be repurchased by the company within a stated time.

There has been issued in pamphlet form a report of the "Development of the Lake Superior Copper Mines," by Arthur L. Carnachan, Calumet, Mich, mining editor of the *Daily Mining Gazette*, Houghton, Mich.

The Grant Duplex Vertical Tapping Machine.

The machine illustrated, a new duplex vertical automatic tapping machine, recently brought out by the Grant Mfg. & Machine Company, Bridgeport, Conn., is designed for special work in connection with the manufacture of such parts as those found in typewriters, adding machines and mechanisms of a similar character. The table is of unusually large proportions to give bearing surfaces for large frames.

By a new method of construction the engaging of the forward driving friction is done by an upward movement of the operating lever. This is considered an improvement upon the method of engaging the friction with



A New Duplex Automatic Tapping Machine Made by the Grant Mfg. & Machine Company, Bridgeport, Conn.

a downward movement of the lever, as the latter necessitates special care to avoid diving the tap into the hole. Another distinctive feature is the ability to operate the taps at unequal hights from the table, which makes it possible to tap holes which are on different planes. To set the taps in correct relation to the holes to be tapped it is unnecessary to block the work into correct position, as the required adjustments can be made in the spindle. The machine has a greater range of capacity because of this new feature, holes from ⅛ to ½ inch being tapped easily and rapidly.

The following are the most important dimensions: Size of table, 16 x 26 inches; width of belt, 2 inches; distance from center to center of spindles, 10 inches; greatest distance from chuck to table, 26 inches; distance from the face of the column to center of spindle, 10 inches, and the floor space occupied 30 x 36 inches. These machines can also be fitted with a greater number of spindles, if required.

The Gayley Dry Air Blast.

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Was the Furnace Running Badly When Under Natural Blast?

Professor Osann in a long article of a very theoretical nature contends that a coke consumption of only 1726 pounds per ton of iron cannot be maintained, and he can only explain Mr. Gayley's figures by the supposition that the installation of refrigerating machinery permitted a badly running furnace to work better by increasing the production. To show that the furnace was not running well he points to the large loss by slips and to the low output as compared with other furnaces (notably Edgar Thomson) in the same district. His conclusion is that the introduction of refrigerating machinery into furnace practice would not be economically justifiable, except perhaps for the manufacture of some special ferro alloy requiring a very high temperature at the tuyeres, to be obtained regardless of cost, a case which is very unlikely to arise with the modern facilities for producing high blast temperatures.

The idea that the furnace was running badly during the period of natural blast is upheld by other writers in our contemporary, one of whom contends that the coke consumption during this period was much too high, when the percentage of metallic iron in the charge and the grade of iron produced are taken into account. He contends that not more than 3 or 4 per cent. of the saving in coke is due to the dry blast, the other 16 or 17 per cent. being gained by better working of the furnace during the second period.

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L. Grabau gives figures which he claims show that the heat necessary to dissociate the aqueous vapor is only 2 per cent. of the total heat produced, and would be of no practical importance, especially as the loss would be in part at least regained by the increased value of the furnace gases. He thinks, however, that the question of drying the blast may become of great importance if the following suppositions are correct. The decomposition of aqueous vapor is carried out by the agency of carbon, the oxygen immediately forming carbon monoxide, as there is no possibility of its uniting with the iron. With the hydrogen the case is different; a part passes through the furnace and reappears in the gas, but another part unites with the molten metal. Here it constitutes a dangerous impurity, and nothing which will limit its amount, such as drying the blast, should be neglected. Hydrogen is the principal cause of porosity in certain kinds of iron, and also in the steel, especially steel castings, for which it forms the raw material.

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A. Lindner of the Teplitz Iron Works draws attention to the fact that Mr. Gayley avoids any estimate of the decrease in costs to be effected by the use of his process. He thinks that the startling results obtained at the Isabella Furnaces can be explained by investigating another source of heat—namely, the coal burnt under the boilers, and is strengthened in this opinion by learning that such coal is obtainable in Pittsburgh at 90 cents per ton. He attempts to calculate the amount of steam coal required when running with natural and dried blast, respectively, but admits that his results can only be approximate, on account of the meager data available. He figures the heating value of the gases with both methods of working, deducting in each case the amount of heat required in the stoves, the remainder being available for steam production. With natural blast this remainder must be considerably larger than with dried blast, and from the difference the increased steam coal necessary can be figured. The power required for the production of blast in the former and for the production of blast and for drying it in the latter case is about the same. For natural blast his calculation shows the amount of heat available for steam making purposes per 100 kilos pig iron to be 294,062 calories, while with dried air the equivalent is 187,781 calories. These figures must be reduced to a similar time unit, as the daily production was different for the two methods. For one hour the figures for natural air are 44,992,098 calories and for dried air 35,490,609 calories, showing a difference of 9,501,489 calories per hour, or 50,273 calories per 100 kilos of metal. Assuming a coal of 7000 calories heating value and a calorific efficiency of the gas firing of 0.8, the amount of steam coal required would be 8.20 kilos. The fuel consumption with dried blast would therefore be:

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This result compares with 96.60 kilos of coke with natural air. The fuel saved is therefore only 10.7 kilos, equals 11 per cent., while the saving in coke is 19.5 per cent. In money the saving would be more than 11 per cent. owing to the difference in price between coke and coal.

It is apparent from the above that if the furnace gas is completely utilized for heating the blast and generating power, it is essential to determine the amount of heat passing out with the gas when comparing the cost of working in two different furnaces. The case may occur where it is economy to use more coke than necessary for the reduction of iron in order to enrich the gases.

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Mr. Lindner closes by an expression of his opinion that Mr. Gayley's work at the Isabella Furnace is an experiment on a grand scale, which will probably not be repeated, and that an invention which has no other use than to counteract the effect of 69 pounds of water per ton of iron is not of the epoch making importance claimed in some quarters.

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Duty on Steel Bands for Band Saws.

On the same day Mr. Fischer handed down a decision disposing of a protest by Henry W. Belcher, New York, against the assessment of duty on certain merchandise at the rate of 3 cents a pound and 20 per cent. and 6 cents a pound and 20 per cent., respectively, as steel bands suitable for making band saws, tempered and untempered. The importer claimed that the goods were dutiable at 9-10 cent, 1 3-10 cents and 2 cents a pound, as pressed or stamped shapes, and saw plates wholly or partially manufactured, and sheets and shapes and steel in all forms and shapes not specially provided for. Mr. Fischer finds that some of the goods were properly assessed, but that others were steel strips not suitable for making band saws, and as to them he sustains the protest.

The Ferro-Alloy Appeal.

WASHINGTON, D. C., March 28, 1905.—In compliance with the request of the Secretary of the Treasury, the Attorney-General has prepared a petition to the United States Supreme Court for a writ of certiorari to the Circuit Court of Appeals in the important test case involving the question of the proper dutiable classification of the ferro-alloys, ferrochrome, ferrotungsten, ferromolybdenum and ferrovanadium, which were recently held to be liable to duty at the rate of $4 per ton by similitude to ferromanganese. The petition emphasizes the fact not hitherto considered in this interesting case—namely, that in at least three different judicial districts importations of these products are now liable to assessment of duty at no less than three different rates.

The Questions Submitted.

Appeal is now made to the Supreme Court to review all the facts and the law and determine, first, whether ferrochrome, which is taken as a type of the other ferros mentioned, is an unenumerated manufactured article subject to the similitude clause, or, second, whether its kindred product, ferrotungsten, is a "metal unwrought," or, third, whether ferrochrome is an unenumerated article, neither manufactured nor unmanufactured, but subject nevertheless to the similitude clause. These three alternative propositions have been laid down in as many conflicting court decisions, which the Government now desires to have considered by the Supreme Court, so that a rule may be established which will enable both the importers and the Government to avoid in future the ever recurring litigation in which these ferros have been involved.

In discussing the uses to which these products are put the Attorney-General's petition embraces a contention that applies to many other products and is, therefore, of general interest. Referring to the decision of the Court of Appeals holding ferrochrome to be dutiable at $4 per ton by similitude to ferromanganese, the Attorney-General says:

> The court points out that these substances look alike, but appearance, until this decision, has never been considered any ground for finding similitude. They are similar in use, according to the court, notwithstanding they produce different results, which is a strange conclusion. Admitting, however, for the purpose of this argument, that they do produce the same results in some instances, the question is, do they in their general use produce the same or similar results? . . . The only use of ferrochrome, according to the record, is as an alloy to steel, while the principal use of ferromanganese is as a purifying or eliminating agent. It is also used as an alloy, but this use is only one-third of 1 per cent. of its principal use as a purifying agent, and we cannot under the decisions of this court find similitude between the principal use of one article and the minor use of another, and that is precisely what has been done by the court in this instance.

Diversity of Classification.

The necessity for the prompt determination of these issues is emphasized by the Attorney-General in a review of the various opinions of the circuit courts in the several

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On March 27 General Appraiser Fischer sustained a protest by Dingelstedt & Co., New York, against the classification as manufactures of metal not specially provided for of watchmen's time detectors. He ruled that the movements and cases are dutiable separately under the provision for watch cases and movements.

Duty on Steel Bands for Band Saws.

On the same day Mr. Fischer handed down a decision disposing of a protest by Henry W. Belcher, New York, against the assessment of duty on certain merchandise at the rate of 3 cents a pound and 20 per cent. and 6 cents a pound and 20 per cent., respectively, as steel bands suitable for making band saws, tempered and untempered. The importer claimed that the goods were dutiable at 9-10 cent, 1 3-10 cents and 2 cents a pound, as pressed or stamped shapes, and saw plates wholly or partially manufactured, and sheets and shapes and steel in all forms and shapes not specially provided for. Mr. Fischer finds that some of the goods were properly assessed, but that others were steel strips not suitable for making band saws, and as to them he sustains the protest.

The Ferro-Alloy Appeal.

WASHINGTON, D. C., March 28, 1905.—In compliance with the request of the Secretary of the Treasury, the Attorney-General has prepared a petition to the United States Supreme Court for a writ of certiorari to the Circuit Court of Appeals in the important test case involving the question of the proper dutiable classification of the ferro-alloys, ferrochrome, ferrotungsten, ferromolybdenum and ferrovanadium, which were recently held to be liable to duty at the rate of $4 per ton by similitude to ferromanganese. The petition emphasizes the fact not hitherto considered in this interesting case—namely, that in at least three different judicial districts importations of these products are now liable to assessment of duty at no less than three different rates.

The Questions Submitted.

Appeal is now made to the Supreme Court to review all the facts and the law and determine, first, whether ferrochrome, which is taken as a type of the other ferros mentioned, is an unenumerated manufactured article subject to the similitude clause, or, second, whether its kindred product, ferrotungsten, is a "metal unwrought," or, third, whether ferrochrome is an unenumerated article, neither manufactured nor unmanufactured, but subject nevertheless to the similitude clause. These three alternative propositions have been laid down in as many conflicting court decisions, which the Government now desires to have considered by the Supreme Court, so that a rule may be established which will enable both the importers and the Government to avoid in future the ever recurring litigation in which these ferros have been involved.

In discussing the uses to which these products are put the Attorney-General's petition embraces a contention that applies to many other products and is, therefore, of general interest. Referring to the decision of the Court of Appeals holding ferrochrome to be dutiable at $4 per ton by similitude to ferromanganese, the Attorney-General says:

> The court points out that these substances look alike, but appearance, until this decision, has never been considered any ground for finding similitude. They are similar in use, according to the court, notwithstanding they produce different results, which is a strange conclusion. Admitting, however, for the purpose of this argument, that they do produce the same results in some instances, the question is, do they in their general use produce the same or similar results? . . . The only use of ferrochrome, according to the record, is as an alloy to steel, while the principal use of ferromanganese is as a purifying or eliminating agent. It is also used as an alloy, but this use is only one-third of 1 per cent. of its principal use as a purifying agent, and we cannot under the decisions of this court find similitude between the principal use of one article and the minor use of another, and that is precisely what has been done by the court in this instance.

Diversity of Classification.

The necessity for the prompt determination of these issues is emphasized by the Attorney-General in a review of the various opinions of the circuit courts in the several

jurisdictions in which these cases have arisen. Continuing, the Attorney-General says:

> Under the conflicting decisions in the varying jurisdictions the Collector of the Port of Philadelphia would properly assess duties on imports of these substances at 20 per cent. ad valorem as "metals, unwrought"; the Collector at New York would assess duties at $4 per ton by similitude of nonenumerated articles to ferromanganese, while the Collector at New Orleans could make his choice between the two classifications or adopt any other which might seem more reasonable to him. Such a diversity of judicial views and the inevitable confusion arising therefrom in the construction and application of the tariff call for the judgment of the court of last resort and the final establishment of one uniform doctrine on the question involved.

Owing to the importance of this case the Government will probably unite with the importers in asking to have it advanced with a view to its early determination.

W. L. C.

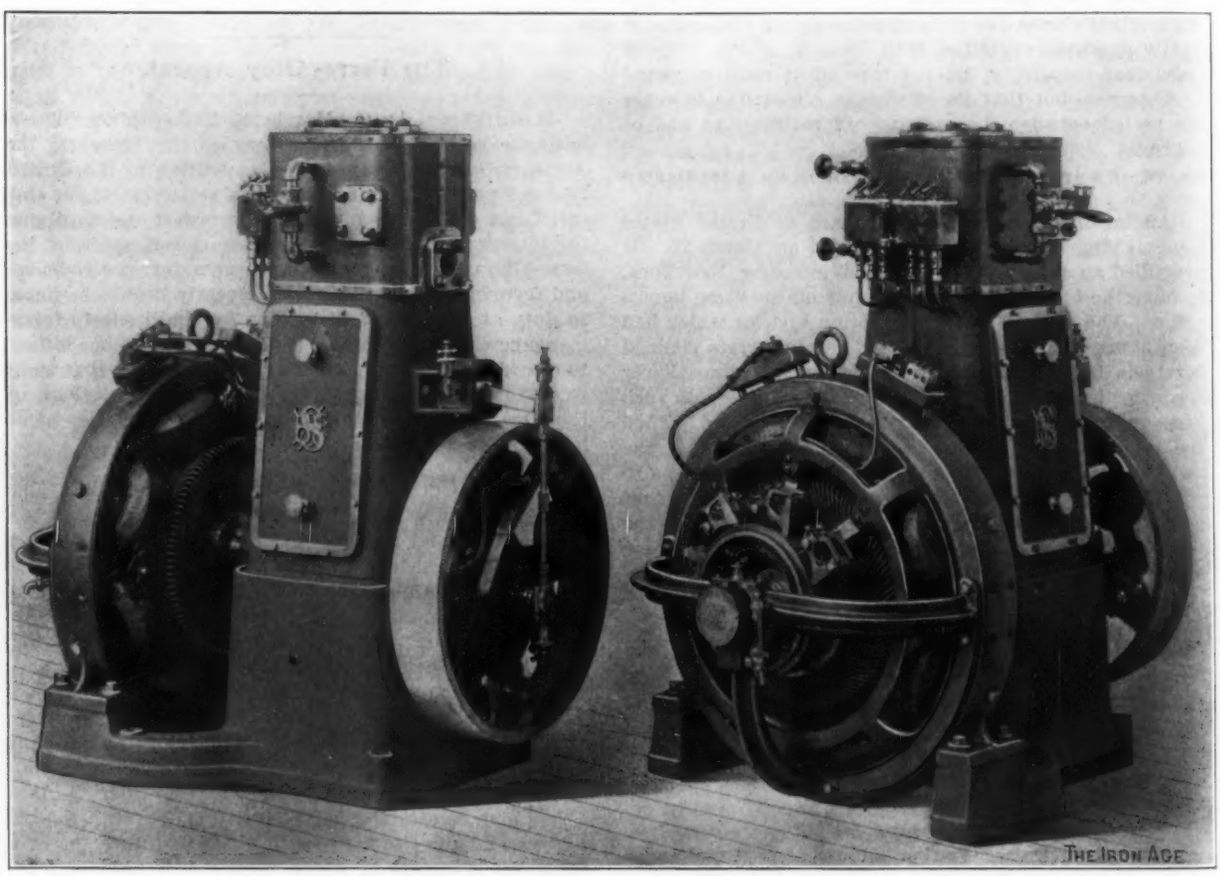
The Indiana Railroad Commission's Powers.—The recent Indiana Legislature created a railroad commission of three members to be appointed by the Governor of the State and to receive a salary of $4000 each. Power is given the commission to supervise freight and passenger tariffs, to adopt necessary regulations to govern car service and the transfer of cars from one railroad to another, and otherwise to control railroad traffic. This power is declared to include authority to correct, alter or establish rates, charges, classifications, rules or regulations where they are deemed unreasonable or discriminative. An appeal may be taken from the commission to the Appellate Court, the decision of which shall be final. The action of the commission is binding until set aside by this court. Collecting higher rates than those fixed by the commission makes the carrier liable to a penalty of $100 to $500. Unjust discrimination incurs a penalty of $500 to $5000, to be recovered in a civil action. Rebates are punishable by fines of $100 to $1000. Accepting a pass or any other favor from a railroad subjects a commissioner to a fine of $50 to $1000 and forfeiture of his office.

The imports into the United States in February, 1905, were larger than in any other month in our history.

A New Sturtevant Generating Set.

This generating set possesses features of interest, as it was originally built by the B. F. Sturtevant Company, Boston, Mass., for the United States Government, in accordance with specifications of the Bureau of Equipment. It consists of a high speed reciprocating engine and an eight-pole 5-kw. generator, and is designed to run at 650 revolutions per minute.

The engine has a 4½ x 4½ inch cylinder cast in one piece with the frame. The valve is of the balanced piston type and is operated by a quick acting Shepherd governor attached to the fly wheel, which regulates within 1½ per cent. from full load to no load. The rod is secured to the piston with a taper fit and to the cross head by a set nut. The cross head, which is of the slipper type, with forked end connecting rod, has a pin 1¼ inches in diameter by 1¾ inches long, while the crank pin is 2 inches in diameter by 2½ inches long, and the main bearing is 1 15-16 inches in diameter by 6 inches long. A neat cast iron frame suitably lagged incloses the entire engine and confines the oil. A large door in the front affords access to the interior. The engine runs with little noise and is especially suitable for modern yachts and similar service. The magnet frame of the generator is of cast iron; the pole pieces are of wrought iron, with cast iron shoes, and are attached to the frame by through bolts. The field coils are easily removable. The armature is of the iron clad, two circuit, form wound, ventilated drum type.



Two Views of a Generating Set as Built to Government Specifications by the B. F. Sturtevant Company.

The generator is capable of carrying a 50 per cent. overload for short periods of time without shifting of the brushes or flashing at the commutator, and is capable of continuous operation at 35 per cent. overload without sparking or undue heating. After a continuous run of ten hours, at full load, the increase in temperature above that of the surrounding atmosphere will not exceed 40 degrees C. in any of its parts. The insulation resistance will withstand a breakdown test of 1500 volts for a period of one minute and shows a resistance of at least 1 megohm with an initial voltage of 500.

The total weight of the set, which includes the engine, generator and subbase, ready for operation, is 1140 pounds.

Doble Tangential Water Wheels.

The Abner Doble Company, San Francisco, reports a substantial and increasing business in tangential water wheels, particularly in large units, the percentage increase in horse-power of wheels sold by the company in 1904 over 1903 being 116 per cent.

For the Electra plant of the Standard electric system the company is now building three 7500 horse-power Doble water wheels, each being of the same general design and capacity as the Doble wheel installed during the last year in the de Sabla plant of the California Gas & Electric Corporation, and which has repeatedly developed 8000 horse-power on overload. One of the large Electra units will operate under a 1250-foot head at 400 revolutions per minute, the water being delivered through a 7-inch nozzle. The other two 7500 horse-power wheels will be directly connected to one 4000-kw. generator, forming a double unit for utilizing water from two separate sources under different heads. The design of this unit is an unusual one, inasmuch as each wheel has sufficient capacity to drive the generator at full load.

One of the wheels will be driven by a 6-inch jet under a head of 1465 feet, the water being taken directly from the main gravity conduit. The other wheel is to be driven by a 7-inch jet under a head of 1250 feet, the source of supply being a large reservoir at the end of the main conduit. This arrangement permits the operation of the generator at full load by running either wheel at its full capacity or by running both wheels under partial load, according to the conditions of the water supply. These operating conditions are only made possible by the use of Doble needle regulating nozzles, which regulate the quantity of water delivered to each wheel. The speed of all three Electra wheels is unusually high, considering the size of the machines, but is permitted by the use of specially designed Doble bearings, similar to those so successfully introduced in the large de Salba wheel. Each of the three Electra wheels will be operated from a Doble needle regulating and deflecting nozzle, the deflecting element in each case being controlled by a suitable hydraulic governor. A 200 horse-power Doble exciter wheel to operate under a head of 1465 feet at 720 revolutions per minute will also be furnished for the Electra plant.

Two 75 horse-power Doble exciter wheels have been built for the Pike's Peak Hydro-Electric Company of Colorado, to operate at a speed of 975 revolutions per minute under a head of 2100 feet, the highest in the United States. By way of contrast may be mentioned the California Fish Commission's order for a Doble wheel to work under the low head of 23 feet. The Braden Copper Company of Chile has ordered four 340 horse-power Doble wheels for operation under a 930-foot head, three for belt drive and one for direct connection to an electric generator. An interesting order recently received calls for a complete saw mill outfit, to be installed in the Philippine Islands, the machinery to consist of a Doble water wheel operating under a 400-foot head and directly connected to the mill. The order included the saw mill as well as the riveted steel pipe for the pipe line.

The New York Central Bridge Contract.—The New York Central Railroad has awarded to the Riter-Conley Mfg. Company, Pittsburgh, Pa., the contract for all the steel work required for renewing the bridges on its West Shore Railroad between Rotterdam Junction and Buffalo and Marblehill cut off, the contract being for approximately 15,000 tons of bridge steel. The contract is to be completed during the present year and involves all classes of bridge work, consisting of deck and through plate girder spans, open web riveted girders, several pin connected spans and long viaducts. About 125 bridges in all are involved in the order, and the material will be furnished by the Carnegie Steel Company.

The Williams Magnetic Clutch.

Announcement was made a short time ago of the placing on the market of a new electromagnetic clutch by the Williams Electro Machine Company, Akron, Ohio. At that time the details of the construction of the clutch were not revealed, it being simply stated that the clutch was actuated by magnetic means and, being electrically operated, could be controlled from any desired point.

The construction of the clutch is well shown in the sectional view, Fig. 1. It will be seen that the clutch belongs in the general class known as friction disk clutches, but differs from the mechanical type in that the disks are clamped by magnetic attraction instead of by toggles or levers, the magnetism being set up by the energizing coil which is shown concentric with the shaft. This coil receives current through contact slip rings and is inclosed in an oil and water proof case, so that the disks may be run in oil if required. In any case they should be lubricated occasionally. The interleaved disks are mounted with the alternate ones secured on the driving member B, and the intermediate ones on the driven member A, each set being secured by key lugs. As the driving disks are loosely fitted to these keg lugs, the armature D when it is drawn by the magnet coil slides on the hub B and presses against the disks, bringing their surfaces into intimate contact. This action also reduces the reluctance of the magnetic circuit and automatically increases the clamping effect, which increases the transmitting power of the clutch.

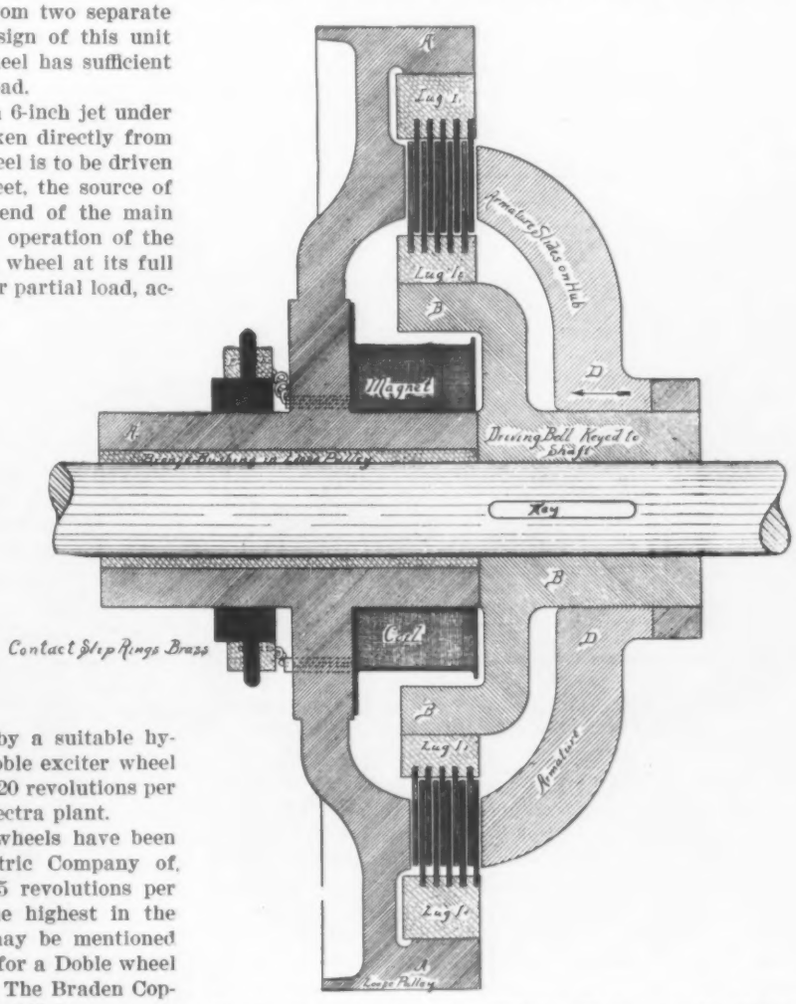


Fig. 1.—Cross Section of the Williams Electromagnetic Clutch.

The multiple interleaved disks introduce to the magnetic circuit a series of small air gaps. Cutting off the current from the energizing coil releases the clamping effect of the disks, causing the air gaps to open, which is assisted by the rotating of the disks on the driving member. In this way is overcome the objectionable residual effect—that is, the tendency of the disks to grip after the current is turned off—due to residual magnetism, which has always been an obstacle in the way of a suc-

cessful magnetic clutch. The material from which the plates are made tends to bring about this desirable result, so that the clutch lets go very promptly when the current is turned off.

The holding or gripping power of the clutch can be increased to almost any degree in reason by decreasing the resistance in series with the magnetic coil to allow more current to flow through it. As the magnetic circuit used in these clutches has a low saturation point, a very small increase of the magnetizing current has a very great increasing effect on the grip of the clutch. This increase in grip is practically proportional to the magnetizing current, as shown by the saturation curve, which

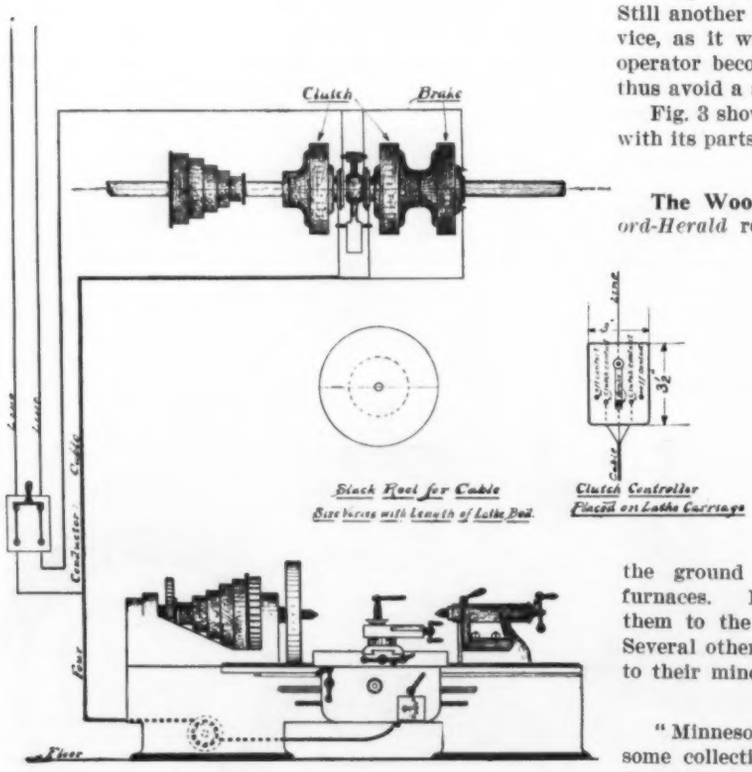


Fig. 2.—Diagram of the Connections for a Forward and a Reverse Clutch and Electric Brake for Driving an Engine Lathe.

is almost a straight line up to the limit of current allowed to pass by the resistance of the coil. For instance, if a clutch uses current of ½ ampere and grips sufficient to transmit 10 horse-power, increasing the current to 1 ampere will give sufficient grip to transmit 20 horse-power at the same speed. This example exaggerates the actual amount of current needed. As the energizing current is in fact very small, a 15 horse-power clutch at 300 revolutions per minute consumes but 1-3 ampere at 110 volts, or considerably less than is used by an ordinary 16 candle-power incandescent lamp.

The diagram given in Fig. 2 shows the electrical connections for a set of clutches and an electric brake used in the driving of a 24-inch engine lathe. The controlling switch is located on the lathe carriage conveniently to the operator. The dimensions of the controller are shown in the detail to the right in the same figure. On account of the small current handled by this controller it can be made even smaller if occasion should require it.

A four-wire cable connects the contact point of the controller with the clutches, brake and line. In the controller shown no starting resistance is used in connection with the clutch coils and the controller, as it is unnecessary except where a very slow start is desired. Such resistance, however, is furnished when needed, the controller being made with additional contact points to allow its introduction into the circuit. The connecting cable is insulated with flexible rubber and covered with a braided protection.

The brake is not necessary to the working of the clutches and may be omitted when desired, but it is of great benefit in lathe operation. Instead of locking the lathe spindle by means of a back gear when taking off or putting on a face plate or chuck, the controlling lever is moved over to the brake contact and the brake holds the spindle from turning up to the point where the belt would slip. The brake is also used in the same way when tapping out a hole in a piece of chucked work. When the work requires frequent reversing of the machine the brake is also a desirable accessory. The brake contact point is between the two clutch contacts and is momentarily thrown into action while moving the controlling lever from the forward running position to the position for running in the reverse direction, and *vice versa*. This causes the brake to take up the momentum of the countershaft and the lathe and reduces the slipping and wearing of the belts and the resulting strain on them. Still another mission of the brake is that of a safety device, as it will promptly stop the machine in case the operator becomes caught in the moving parts, and may thus avoid a serious accident.

Fig. 3 shows the complete clutch and Fig. 4 the clutch with its parts dissembled.

The Woodward Iron Company.—The Chicago *Record-Herald* recently contained an extremely interesting article dated at Birmingham, Ala., written by its traveling correspondent, Wm. E. Curtis, who in discussing the various manufacturing interests of the district thus refers to the Woodward property: "One of the most extraordinary properties in the world is that of the Woodward Iron Company, which is located in a narrow valley, where its coal and iron mines adjoin each other, with deep quarries of limestone scattered around in a most convenient manner. All of its raw materials are dug out of the ground within almost a stone's throw of its furnaces. It operates a diminutive railroad to bring them to the furnace and has no freight bills to pay. Several other furnaces are situated in a similar relation to their mines, but none so conveniently as this."

"Minnesota Iron Mines" is the title of a very handsome collection of photographs published by Welbanks, Crandall & Co., Duluth, the photographs being by R. S. Crandall and the introductory and descriptive remarks by

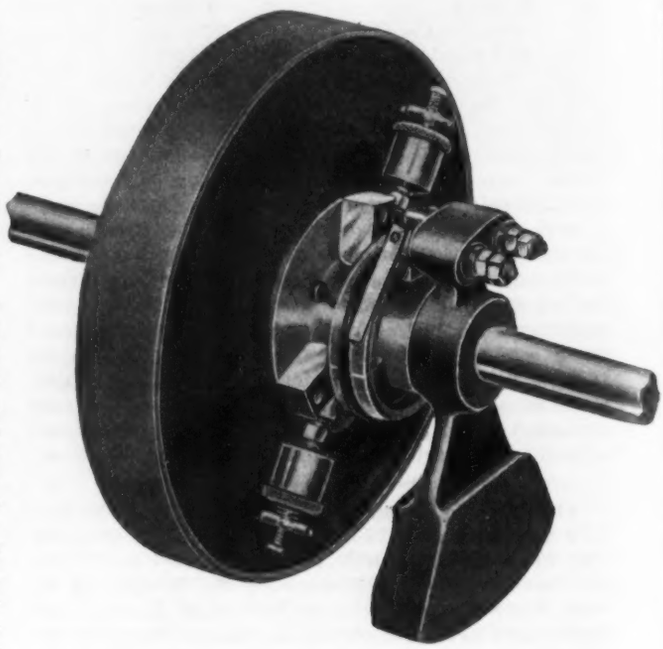


Fig. 3.—A Perspective View of the Clutch Assembled.

Dwight E. Woodbridge. There are pictures of the famous Mahoning, Biwabik, Mountain Iron, Oliver, Adams, Burt-Pool, Stevenson, Fayal, Hawkins and other mines, of docks, boats, shaft houses, steam shovels, &c.

Railway Engineering and Maintenance of Way Convention.

The American Railway Engineering and Maintenance of Way Association opened its sixth annual convention at the Auditorium, Chicago, March 21, and occupied the two following days. President Hunter McDonald called the meeting to order Tuesday morning and delivered his address. The succeeding sessions of the convention were devoted to the consideration of the reports of standing committees.

There were 16 committee reports, as follows: Roadway, Ballasting, Ties, Rail, Track, Buildings, Wooden Bridges and Trestles, Masonry, Signs, Fences and Cattle Guards, Signaling and Interlocking, Records, Reports and Accounts, Uniform Rules, Water Service, Yards and Terminals, Iron and Steel Structures, Economics of Railway Location, and a special report on the Classification of Track. Interesting discussions supplemented the reports.

The last business of the convention was the election of officers. The Nominating Committee presented the following names for officers, whose election was subsequently confirmed: President, H. G. Kelley, Minneapolis & St. Louis and Iowa Central; vice-president, A. W. Johnston, New York, Chicago & St. Louis; secretary, L. C. Fritch, Illinois Central; treasurer, W. S. Dawley, Chicago & Eastern Illinois. Directors: J. B. Berry, Union Pacific; W. McNab, Grand Trunk.

The following, among other exhibitors, were represented at the maintenance convention, with attractive displays on the parlor floor of the Auditorium:

American Steel & Wire Company, Chicago.
American Valve & Motor Company, Cincinnati, Ohio.
Armstrong Bros. Tool Company, Chicago.
Beaver Dam Malleable Iron Company, Beaver Dam, Wis.
Belle City Malleable Iron Company, Racine, Wis.
Border Bolt & Nut Lock Company, Richmond, Ind.
Buda Foundry & Mfg. Company, Chicago.
Cambria Steel Company, Philadelphia, Pa.
Chicago Bridge & Iron Works, Chicago.
Chicago Wire Fence & Tool Company, Chicago.
Cortright Metal Roofing Company, Chicago.
Dayton Hydraulic Machinery Company, Dayton, Ohio.
Dickinson, Paul, Chicago.
Dixon, Jos., Crucible Company, Jersey City, N. J.
Doelp Forging & Casting Company, Lima, Ohio.
Eastern Granite Roofing Company, New York.
Engineering Agency, Incorporated, Chicago.
Eyeless Tool Company, Newark, N. J.
Grip Nut Company, Chicago.
Hart Steel Company, New York.
Hussey-Binns Shovel Company, Pittsburgh, Pa.
Illinois Steel Company (cement department), Chicago.
Ingersoll-Sergeant Drill Company, New York.
Keuffel & Esser Company, New York.
Leschen & Sons Rope Company, A., St. Louis.
Lidgerwood Mfg. Company, New York.
Link Belt Machinery Company, Chicago.
Lufkin Rule Company, Saginaw, Mich.
Merchant & Co., Incorporated, Philadelphia, Pa.
National Lock Washer Company, Newark, N. J.
Otto Gas Engine Company, Chicago.
Pennsylvania Steel Company, Steelton, Pa.
Rand Drill Company, Chicago and New York.
Robertson Mfg. Company, Chicago.
Safety Nut Lock Company, Minneapolis, Minn.
St. Louis Expanded Metal & Fireproofing Company, St. Louis.
Scherzer Rolling Lift Bridge Company, Chicago.
Solid Steel Tool & Forge Company, Pittsburgh, Pa.
Stowell Mfg. & Foundry Company, South Milwaukee, Wis.
Trussed Concrete Steel Company, Detroit, Mich.
U. S. Steel Piling Company, Chicago.
U. S. Metal & Mfg. Company, New York.
Verona Tool Works, Pittsburgh, Pa.

Drawback on Mining Machinery and Supplies.—The Treasury Department has issued regulations for the payment of the legal drawback on the exportation of mining machinery and supplies, comprising ore bin linings, ore buckets, tanks, shafting, ore cars, cages, stamp stems, &c., manufactured by Roy & Titcomb, Nogales, Ariz., wholly from imported iron in the form of sheets, bars and shafting. In liquidation, the quantity of imported material which may be taken as a basis for the allowance of drawback may equal the quantity declared in the drawback entry and sworn abstract, after official verification of exported quantities, a proper allowance being made for nonvaluable wastage where a wastage is shown to have been incurred not to exceed 5 per cent. of the net weight of the imported material contained in the exported articles.

Fig. 4.—The Parts of the Williams Electric Clutch.

The *Revue Industrielle* of Paris in its issue of February 11 last devotes a page of descriptive matter and a double page supplement of drawings to the Murray Corliss engine that was exhibited at the St. Louis Fair by the Murray Iron Works Company, Burlington, Iowa.

The National Metal Trades Association.

Seventh Annual Convention, Chicago, March 23 and 24.

The Results Accomplished.

In many ways this was an epoch-making meeting. Chief among the steps taken was one looking to the admission of local metal trades associations into active membership, by which the strength of each should become the strength of both; local bodies to have active management of local affairs and the National Association to stand back of the local branches with the full force of its organization in time of trouble. All this is to be done without double taxation, and on such a basis that any employer of any considerable force in the metal trades could become a member without burdensome expense. When this plan is put into effect, after details to be decided upon by the Administrative Council, an effort will be made to have every community containing a sufficient number of industries in the metal trades organize a local branch of the National Association, and local associations already organized will be invited as individuals or as societies to become members of the national body; local chairmen or commissioners to become vice-chairmen and deputy commissioners of the National Metal Trades Association.

Another important step taken by the association was a resolution resulting in the appointment of a committee to wait on the National Founders' Association with a view to bringing about harmonious interrelations, this move being the result of similar overtures made at the last annual convention of that body. The committees from both bodies will meet and formulate plans for the prevention of duplication of effort and expense and for the furtherance of useful work along similar lines.

The predominating spirit of the whole convention was that of arriving at means for securing the greatest good to the greatest number, not only of employers but of employees as well, and not one speaker but many voiced the conviction that upon that association and other similar bodies of employers in the country lay the ultimate salvation of the ambitious, sober, industrious individual workingman, skilled and unskilled. Throughout the proceedings a broad, humanitarian spirit was evidenced, not a maudlin sort of altruism which forgets the problems of the present, but a businesslike consideration of the interrelations of employer and employee, with the end always in view of securing industrial peace on a basis which should be favorable both to the worker and his employer. The certificate plan which is in vogue in the association, by which faithful and deserving workmen are provided with certificates bearing a record of their employments and capabilities, was commended, and the sentiment was voiced that a loyal labor army was thus being marshaled which could be counted upon to render efficient and conscientious service at any and all times.

Two almost equally divided factions or parties seemed to be in evidence. One of these exalted the national body over the locals and was conservative in reference to the admission of new members on any basis less expensive than had been the cost to the original members of the body. The other favored a plan of a flat initiation fee, preferably a small one, with the view of greatly extending the membership and scope of the organization. The bone of contention seemed to be the reserve fund accumulated from the larger dues of the past, in which many of the older members seemed unwilling to have new comers participate unless they made similar contributions. Over and above these two radical factions, however, the general membership of the association, working on broad lines, was powerful in ignoring technical and small financial details, and carrying on the work on a basis that sought the welfare and advancement of the craft at large.

THE OPENING SESSION.

In the banquet hall of the Auditorium, at 10.30 Thursday morning, H. N. Covell, superintendent of the Lidgerwood Mfg. Company, Brooklyn, N. Y., the president of the association, called the meeting to order. In the absence of Mayor Harrison Dr. Howard S. Taylor, a member of his cabinet, welcomed the guests eloquently. He sounded the keynote of organization by saying, "You are here to uphold each other and to prevent others from holding you up," but urged that, in the proceedings which should follow, the third party, the consumer, should be considered. The following committees were announced by the chair, their selection having been made by correspondence previous to the session:

Convention Committee: John D. Hibbard, president John Davis Company, Chicago; C. Bermingham, manager Canadian Locomotive Company, Kingston, Ont.; Wm. Lodge, president Lodge & Shipley Machine Tool Company, Cincinnati, Ohio; J. Kirby, Jr., general manager Dayton Mfg. Company, Dayton, Ohio; A. H. Bullard, secretary Bullard Machine Tool Company, Bridgeport, Conn.

Ways and Means Committee: George F. Brooks, treasurer Harrington & Richardson Arms Company, Worcester, Mass.; G. K. Garvin, president Garvin Machine Company, New York City; W. M. Taylor, Chandler & Taylor Company, Indianapolis, Ind.; J. C. Hobart, manager Triumph Electric Company, Cincinnati, Ohio; E. T. Gilbert, general manager Michigan Nut & Bolt Works, Detroit, Mich.

Auditing Committee: Wm. Medart, Medart Patent Pulley Company, St. Louis, Mo.; E. K. Swigart, Bucyrus Company, South Milwaukee, Wis.; F. Macomb Cresson, Geo. V. Cresson Company, Philadelphia, Pa.

Constitutional Amendments: Geo. F. Steedman, president Curtis & Co. Mfg. Company, St. Louis, Mo.; Wm. Butterworth, treasurer Deere & Co., Moline, Ill.; F. H. Stillman, Watson-Stillman Company, New York City.

Hours and Wages: E. A. Watson, Caldwell-Watson Machinery Company, Birmingham, Ala.; R. H. Jeffrey, vice-president Jeffrey Mfg. Company, Columbus, Ohio; F. F. Stockwell, treasurer Barbour-Stockwell Company, Cambridge, Mass.

Strikes and Lockouts: A. B. See, president A. B. See Electric Elevator Company, New York City; George Bartol, general manager Otis Steel Company, Cleveland, Ohio; Thos. Durban, Erie City Iron Works, Erie, Pa.

Nominating Committee: In pursuance of the provisions in the constitution and by-laws, a Nominating Committee was named from the floor as follows instead of being selected prior to the meeting: Wm. Lodge, president Lodge & Shipley Machine Tool Company, Cincinnati, Ohio; Mr. Powell, Woodman & Powell Planer Company, Worcester, Mass.; O. B. Kinard, Kinard-Haines Company, Minneapolis, Minn.

Report of Officers.

President Covell read an eloquent and at the same time thoroughly businesslike report, which was received with prolonged applause. This report is, in part, as follows:

President's Address.

During the past year many important matters have occurred in our association. We have progressed steadily in membership and good feeling, and *esprit de corps*, which has always characterized our association and of which we are justly proud, has been maintained and strengthened, if, indeed, such a thing could be possible. without this spirit any organization is ultimately doomed to failure.

Our finances are in splendid condition and in the face of large disbursements necessary to protect our members and uphold our principles our reserve fund shows a very satisfactory balance. Dues have, with few exceptions, been promptly paid, and our delinquents in number and amount are far less than ever before.

We met with a severe loss in the resignation of E. F. Du Brul, our commissioner, in the spring, who by reason of private business, asked the Administrative Council to accept his resignation, which it did with reluctance. I am glad to have this opportunity to pay a tribute to the great service rendered by Mr. Du Brul to the association during his term of office. He assumed the commissionership when affairs did not appear encouraging and nothing but trouble could be discerned on the horizon. His success needs no comment on my part. You all know what he accomplished and the

thanks of each one of us are due to Mr. Du Brul. We were, however, extremely fortunate in being able to secure the services of the present commissioner, W. P. Eagan. Too fulsome praise would be embarrassing to him. Suffice it to say that actions speak louder than words, and it has been amply demonstrated that no mistake was made in his selection, and the association may heartily congratulate itself.

The machinists' strike in Chicago in the early summer was met in a manner as satisfactory to our members as it was astounding to those who precipitated it. Too great credit cannot be given to our Chicago members and others associated with them who unselfishly remained true to our principles and stood like a rock to maintain their rights. No strike was ever fought more stubbornly and bitterly and, I might add, viciously. Slugging, assault and every form of unlawfulness and intimidation were everyday affairs. No example may be cited where organization so clearly demonstrated its necessity. And right here let me state publicly that all praise and credit and thanks must be given to our commissioner and to Mr. Wuest, secretary, for the thoroughly efficient manner in which they conducted this strike for the association. Careful and systematic, with rare fidelity to the interests intrusted to them, these two gentlemen carried on the battle. It required courage, too, of no mean order, let me tell you.

The statement has been made that the purpose of this association is to destroy labor unions. This I positively deny, and it seems almost ridiculous to have to so state. I think any fair minded man will admit that the employee has the same right to organize that the employer has. Labor unions are not wholly bad by any means, and among the ranks of labor leaders are many men actuated by honest endeavors to better the conditions of the wage earner. It is only when they step beyond their sphere and endeavor to force conditions which are economically wrong and to use their power to prevent the employer from exercising his constitutional and God-given rights in saying whom he shall employ and in what manner that this association steps in.

One of the principal matters which will receive the attention of this convention is the relation of the National Asociation to the local association. Pursuant to the instructions given by the last convention, your president appointed a Committee on Plan and Scope to take up this great question. For a year this committee has been working on the problem and has prepared a report for presentation to this convention. The labors of this committee have been arduous. It is no easy matter to solve, and much painstaking thought and work has been freely and willingly given.

Our relations with other associations should receive attention. I believe that more effective work would ensue if organizations should confine themselves strictly to the purpose for which they were formed. That is to say, with so many employers' associations there is danger of each endeavoring to perform a part of the functions of the others. The result is more or less confusion and a duplication of expense and work. To our older sister, however, the National Founders' Association, all praise be given. She has kept to the purposes originally laid down and she has received a light and now, thank God, her principles and ours are identical. There are many members of that organization members of this, and one of my fondest hopes is that one day we will be united into one grand association, each made stronger by the companionship of the other.

Commissioner's Report.

W. P. Eagan of Cincinnati, the commissioner, read a forceful report, of which the following is a condensation:

The year has been one of success for the general employers' organization movement, and particularly for the National Metal Trades Association. We have passed through a year of marked business depression and of radical union activity, and have emerged a stronger, better equipped and more highly respected organization than ever before.

The past year has witnessed a pronounced change in public sentiment in the matter of rampant trade unionism. From an attitude of supine tolerance of anything and everything, lawful and unlawful, done in the name and on behalf of trade unionism, the public has in a measure been awakened to a realization that the methods employed by the leading trade unions of to-day cannot longer be tolerated if the industrial supremacy of this country is to be maintained. This sentiment has crystallized on the open shop issue, using that term in its broader sense as signifying the entire absence of unwarranted interference and restriction.

Trade unionism follows general business conditions; can prosper and develop only when employment is plenty and wages are good. A time of depression such as we have just passed, with its consequent scarcity of employment, invariably means depletion of the treasury and restricted opportunity for the carrying on of the mistaken plans of the leaders of trade unionism.

The unions of metal working mechanics are to-day more thoroughly committeed to the policy of lawlessness and the promotion and defense of flagrant violence than ever before. With the return of prosperity and with improved business conditions we shall see renewed activity on the part of these unions, and it behooves us to have our organization in such shape that we can successfully cope with any situation that may arise.

The treasurer's report, to which you have listened, must have been a source of satisfaction to you, particularly in view of the enormously expensive strike through which we passed in Chicago. In speaking of the expense of this conflict, it was enormously expensive in money, but in view of the results achieved it was the best investment that the National Metal Trades Association ever made.

We are prepared as we never have been to undertake the defense of any of our members unjustly attacked. With the experience and knowledge we have gained in the most effective methods to be pursued, with our records and with our contract and certificate men, we are in a position to carry on our work successfully, no matter what contingency may arise. We have adopted the plan of personally spending whatever money is authorized to be spent in strike cases in every instance where circumstances permit it. In past years the association attempted to conduct its battles at long range and with results not entirely satisfactory, either from the standpoint of the organization or from that of the member affected. We have found the most satisfactory results are to be obtained by immediately proceeding to the seat of trouble, and, if warranted, remaining there until the difficulty has been remedied, expending our own money and leaving no claims to be adjusted after the strike is over.

We have determined that only as a last resort will bonuses be paid to workmen for working in struck shops. Our experience has been that the payment of a stated sum per day as a bonus, over and above the regular wage, did not accomplish the result desired, in that it did not replace strikers with permanent workmen.

The Chicago strike resulted in the most crushing defeat that the International Association of Machinists has ever received. The number of applications for membership from Chicago manufacturers since the strike was fought out and the many letters of appreciation which we have received attest better than could any words of mine their appreciation of the work done by our organization. These gentlemen are thoroughly convinced of the absolute necessity for the existence and work of the National Metal Trades Association, as indeed is the case with all of our members who have an opportunity of seeing our work at close range. You have done more in these few months to check the development of this fighting union than in all the previous years of our history. All this work has been successfully carried on by your officers without it being necessary to ask for anything in the nature of a special assessment, and it is a pleasure to feel that we are still in financial condition to effectively defend ourselves.

During the past year we have emphasized the lesson heretofore learned, that standing back to back on a platform of absolute fairness, no attack by any trade organization or combination of such organizations can force us to give up the vital principles for which we contend. So long as the National Metal Trades Association stands for justice and fairness to all men, each within his rights as clearly defined by the laws of the land, and so long as its membership displays the loyalty that has been so evident in the past, nothing can prevent its continued success.

This report, on motion of J. C. Hobart of Cincinnati, was ordered printed, together with that of the president, and copies to be sent the members.

Secretary's Report.

Robert Wuest of Cincinnati, the secretary of the association and editor of its official organ, the *Open Shop*, read a report showing the present membership of the association and the healthy increase during the year. He spoke enthusiastically of the success of the certificate plan, and said that to-day the association's certificates were held in higher esteem by their holders than a union card had been. He cautioned, however, great care and accuracy on the part of members in giving certificates to employees, as looseness in that direction had made necessary a vast amount of work and correspondence on the part of the association officers. On the subject of the *Open Shop*, the organ of the association, Mr. Wuest spoke enthusiastically, describing how subscriptions were coming in in large numbers from employers not members as well as from those who were, the copies being ordered for

distribution among the employees. The subscription list, he said, had increased 81 per cent. in the last year.

On a motion by G. F. Steedman of St. Louis, on behalf of the Finance Committee, it was decided that the dues of each member for the ensuing quarter be at the rate of 15 cents per month per operative employed.

THURSDAY AFTERNOON SESSION.

The topic for discussion at this session, one that had consumed much time in previous conventions, was the relationship between the national and local associations. The discussion was precipitated by the report of the Plan and Scope Committee, consisting of W. D. Sayle, Cleveland Punch & Shear Works, Cleveland, Ohio, chairman; Chas. E. Hildreth, P. Blaisdell & Co., Worcester, Mass.; A. Falkenau, Falkenau-Sinclair Machinery Company, Philadelphia, Pa.; F. K. Copeland, Sullivan Machinery Company, Chicago, Ill.; C. B. Kinnard, Kinnard-Haines Company, Minneapolis, Minn.

This report, which was submitted in printed form, had been arrived at after nearly a week's discussion at a committee meeting held at Washington, D. C., and had subsequently received the indorsement of the Administration Council. The full text of this report is as follows:

Your committee, acting under the resolution quoted, concur in the belief that for the purposes contemplated in forming the association the present constitution and laws provide all the means that are necessary.

We are convinced, however, that there is a larger field of work that can be effectually performed by the National Metal Trades Association and be made a great and direct benefit to its members. We believe that to successfully carry on this enlarged work we shall require the co-operation of local branches, and that it is necessary to secure the closest co-operation between local and national interests.

We are certain that, so long as labor organizations are national in character, the greatest benefits to the trades we represent can be obtained only through a national organization so constituted as to harmonize the work in different localities, and we are convinced that the absence of such harmony will tend to defeat the ends sought.

The lack of uniformity of action on the part of employers has furnished the means by which trade unions have been able to enforce conditions which would otherwise have been impossible. It is well known that their plan is to impose a condition in one portion of the country, selected possibly because of the weakness of the employers there, and make that the standard of their operations in all other parts of the country. To defeat this method and to enable local branches to be of the greatest use to their members, it is absolutely necessary that they should be closely identified with the National Association, in order to secure uniformity of action.

To attain this end we consider it necessary that members of local associations should be members of the national, and that members of the National Association, so far as possible, should be affiliated with a local branch.

We believe that this will tend to enhance the value of the local association to its members, as well as to increase the efficiency of its officers in the line of work they have now so well in hand, since they will be enabled to avail themselves of the information and experience gained by the national officers in their broader field. To fully accomplish this purpose, we recommend that so soon as a local branch composed of not less than 10 members of the National Metal Trades Association, and employing not less than 500 operatives, is formed, the secretary or officer in active charge may be appointed a deputy commissioner of the National Metal Trades Association.

In considering any plan for increasing our usefulness we must remember that we have many loyal and valuable members operating in such localities as preclude their affiliation with a local branch, and no plan must be adopted which does not fully protect their interests. We are certain that the plan which we have outlined will not be detrimental to their interests in the slightest degree.

In order properly to bring this matter before the convention, the following resolution is presented for consideration and discussion:

Resolved, That the extension of the work of the National Metal Trades Association will be furthered and facilitated by our members wherever possible grouping themselves into branches, through which branches membership in the National Metal Trades Association shall be obtained and held.

John D. Hibbard, president of the John Davis Company; F. S. North of the Union Special Sewing Machine Company, and F. K. Copeland, president of the Sullivan Machinery company and chairman of the twelth district, all of Chicago, made able addresses from the standpoint of members in both the local and national associations, favoring some plan by which the local association might become a member of the national without losing its autonomy or incurring greatly added expense. Mr. Hibbard said that the recent victory in Chicago was won with unnecessary difficulty arising from the fact that only a small part of the Chicago Association members were also members of the national. Great credit was given Messrs. Wuest and Eagan for the help they had rendered the Chicago members of the national body in bringing in skilled workers from other cities, though the fact that the members of the local body who were not members of the national had not received such assistance had greatly complicated matters locally and led at times to working at cross purposes, to say nothing of strained personal relations and the duplication of effort and expense. Mr. North declared emphatically that, notwithstanding the strength and unity of the Chicago Association, it could not cope permanently with its adversaries without the co-operation of the national body, and that to-day the greatest difficulty in securing members to either the national or local associations in Chicago lay in the fact that the two were separate, some prospective members expressing preference for the policy of the national, some favoring the local, while the great majority bandied their callers back and forth from one to the other, making the existence of the two bodies their excuse for joining neither. He spoke for a conference of the executive officers of both bodies, with a view to arriving at some basis by which their interests could be made mutual. Mr. Copeland spoke in the same vein.

Paul Blatchford, secretary of the Chicago Metal Trades Association, to whom the courtesy of the rostrum was extended, also spoke in favor of merging his association into the national organization, and declared it as his belief that every secretary of every local association would work with such energy for the national body that before another year it would have three times the membership. He suggested that present local secretaries be made deputy commissioners, in which capacity they could relieve the commissioner-in-chief of a bewilderment of detail and the hardship of constant travel, giving his time to attend to the larger duties of his office.

Ex-Commissioner Du Brul heartily applauded this idea, and pictured the strength and strategic efficiency that would come from an organization that had an efficient deputy commissioner and a live working branch organization at every important center.

H. W. Caldwell, Chicago, told a stirring story of the battle that his company had waged single handed against an unreasoning labor organization, in which, though only a small detail of the division of the 54 working hours of the week was involved, an expense and loss were incurred that were appalling. He lauded the National Metal Trades Association for its magnificent *personnel* and its well defined and consistently followed policy. He earnestly advised that body to exercise the greatest scrutiny in admitting local associations, and to be sure that every individual member thereof personally subscribed to the laws of the National Association in such a way that a penalty would follow their infraction.

E. E. Koken, president of the Koken Barbers' Supply Company, St. Louis, presented a resolution from the St. Louis Metal Trades Association favoring an organic union with the National Metal Trades Association on a basis satisfactory to the members of the St. Louis association, and authorizing a committee of three to confer with the National Association committees and report thereon.

In presenting the resolution he said that though St. Louis had not thus far had any labor conflicts with which it had not been able to cope without outside aid, he and his associates felt that membership in the National Association was in the nature of insurance against strikes, as labor leaders would be less likely to call a strike on an employer who was backed by the powerful National Association than one who had only local backing or no backing at all. Mr. Koken's appeal was ably seconded by George F. Steedman, president of the Curtis & Co. Mfg. Company, St. Louis.

Other discussions followed on the original motion and on amendments which were offered thereto. All the amendments were lost. Finally Mr. Du Brul offered an amendment which repeated the language of the original motion and added thereto the following:

"And that the Plan and Scope Committee be instructed to report a plan of organization along the above lines."

This amendment was carried by a vote of 54 to 30, and was finally made unanimous on motion of Mr. Kirby. Mr. Sayle, as chairman of the Plan and Scope Committee, asked members to offer suggestions and to work with and for the committee.

It is out of the question to reproduce all the various discussions on this important topic which led up to the adoption of Mr. Du Brul's amendment and the original resolution as amended. Among the speakers who took part were C. E. Hildreth and George F. Brooks, both of Worcester, Mass. E. P. Robinson, superintendent of Atlantic Works, Boston, at first vigorously opposed the resolution because it did not embody a definite plan and did not clearly define the relationship to exist between local and national bodies and was silent on the subject of labor bureaus and executive expenses, but as one after another of these points was clearly defined in the discussion he withdrew his objections and became an enthusiastic supporter of the new move.

W. H. Pfahler of Philadelphia, the only honorary member of the association, made an able address in which he told of the reasons for the formation of the National Metal Trades Association and of the present plans of the Administrative Council as suggested in the resolutions under discussion. Phil Fosdick of the Fosdick Machine Tool Company, Cincinnati, spoke of the burden which fell to the lot of the manufacturers of the present day in belonging to a great number of associations, and urged this as another reason for merging local into national associations. F. A. Geier of the Cincinnati Milling Machine Company, Cincinnati, reminded his hearers that the reserve fund was no personal asset to them unless they went out of business, which few of them cared to do. He asked them to forget the existence of this fund and to be broad enough to permit new members to share in the good of the organization on a basis by which each should pay an equal amount and receive an equal service. J. Kirby, Jr., of Dayton, said the time had come when employers were beginning to realize that they must make financial sacrifices to create a great National Association that would be able to protect the interests of its members against the organized efforts of the labor element. Commissioner Eagan spoke much in the same vein as Mr. Geier had done, saying that he had every confidence in the ability of the Administrative Council to act wisely and commending the Plan and Scope Committee for the vast amount of labor it had expended in bringing the resolution before the convention in the shape in which it had been presented. G. F. Steedman of St. Louis stated that the local metal trades association included 72 firms, all employers in the metal trades, with 2200 full rate operatives, and that only 17 or 18 of these firms were now members of the National Association. He pleaded for a measure that would permit the admission of the whole St. Louis body on favorable terms, as otherwise there would be a dangerous division of interest.

A. Falkenau of the Falkenau-Sinclair Company, Philadelphia, asked: "Do you desire solidarity of all metal trades in the country? If so, you will indorse the resolution and leave details to the council." F. H. Stillman of the Watson-Stillman Company, New York, believed that the diversified interests of the association could only be harmonized by the enlargement of its scope so as to admit and foster local associations. John Peebles of the J. I. Case Threshing Machine Company, Racine, Wis., voiced the fear that the new move might, if not wisely guarded, result in a too loose federation of locals rather than a strongly centralized national. O. P. Kinnard, Minneapolis, spoke in the same vein. Thomas Durban of the Erie City Iron Works, Erie, Pa., said that he had observed that the tendency of the association seemed to be to reform itself into an aggregation of locals, and expressed a fear that this might not prove sufficient protection for the communities where there were not enough firms to warrant the organization of the local. He was assured by Messrs. Geier, Eagan and other members of the committee that this matter had received their thorough discussion, Mr. Eagan saying that his statistics showed that 35 per cent. of the members came from communities that could not advantageously form local associations. R. L. Kenah, Jr., of the Pierce, Crouch Engine Company, New Brighton, Pa., asked that the requisite number of firms forming a local association be held down to the small number so that communities such as his could form branches.

The Banquet.

As the guests of the local members of the National Metal Trades Association and of the officers and members of the Chicago Metal Trades Association, the delegates to the convention sat down to an elaborate dinner in the banquet hall of the Auditorium at 7 o'clock Thursday night. The programme was informal throughout and there were no set speakers. John D. Hibbard presided and called on members at random. Among the speakers were Daniel Davenport of the American Anti-Boycott Association, Bridgeport, Conn.; F. A. Delano, until recently general manager of the Chicago, Burlington & Quincy Railway; A. C. Allen of Chicago; Frederick W. Job, secretary of the Chicago Employers' Association, and W. H. Pfahler of Philadelphia.

The speeches were all good, but distinctively the feature of the dinner was the presentation to H. N. Covell, president of the National Association, of a massive silver service, consisting of a tray and seven pieces, all appropriately marked. An eloquent and earnest presentation address was made by Mr. Pfahler, and was fittingly replied to by the surprised donee. The address of Mr. Allen was a stirring one, in which he made some reference to the attempt to murder him during the recent strike. An address by Mr. Pfahler on the general situation was deemed so valuable that a motion was made in the following day's session to have it printed and sent in pamphlet form to the members of the association.

FRIDAY MORNING SESSION.

F. S. North of the Union Special Sewing Machine Company, Chicago, spoke on "Superintendents' and Foremen's Associations." On motion by Mr. Kirby this paper, which was enthusiastically commended, was ordered printed in the *Open Shop*.

Discussion followed in which Mr. Du Brul spoke of the importance of being certain that foremen and superintendents were loyal, because the provocation or prevention of strikes lay more in the hands of the foremen and superintendents than it did with the employers, as the foremen were closer to the men. He gave some interesting facts regarding the socialistic *régime* which is now prevalent in Australia, and spoke of the cordial correspondence relations existing between the National Metal Trades Association and the Victorian Employers' Association. The same socialistic influence which had turned things upside down in Australia was at work in this country, and unless employers kept close to their men and kept improving their shop conditions, and unless this and other employers' associations were very vigilant, organized trade unionism in this country through political machinery would bring about the same dire condition that existed in the southern continent. Mr. Kirby spoke in the same vein. A. B. See of the A. B. See Electric Elevator Company, New York, illustrated the points made by the previous speakers by telling of personal experiences in which he had been able to prevent serious disturbances among his men by close personal contact with the workers both outside and inside his plant.

Frederick W. Job, secretary of the Chicago Employers' Association, by invitation made an address. He asked the National Metal Trades Association not to overlook local employers' associations and citizens' alliances, and advised the members wherever possible to speak a good word for these associations in every town in which the metal trades were represented, as all employers' associations should be a unit in their efforts and should work in

harmony. He gave some interesting facts concerning a large strike now on at Racine, Wis., and the assistance which had been rendered by the Chicago Employers' Association and the Civic Federation.

C. Bermingham, manager of the Canadian Locomotive Works, Kingston, Ont., gave some interesting facts concerning the Amalgamated Association of Engineers, a British union, which combined with it an insurance feature, and which had now in its treasury a reserve fund of $2,000,000. In many ways he considered this a model union of workers, as it was vigorously opposed to strikes, to violations of contract, to limitation of output, and was concerned, most of all, in the effort to keep its members at work as many days in the year as possible at good wages.

The Plan and Scope Committee Reports.

The Plan and Scope Committee, to which had been referred the task of drafting a plan which would provide for the admission or formation of local associations, made its report, in which it proposed that members of such branch associations should pay a monthly fee of 15 cents per operative to the National Association in addition to their dues to the local associations, and that isolated members of the National Association pay 20 cents per month per operative. As the matter of expense had been from the first the bone of contention and had prevented the absorption long ago of large local associations into the national, a spirited discussion arose which was participated in by Messrs. Geier, Kirby, Hobart, Koken, Hildreth, Robinson, Eagan, Hibbard, Stevens, Falkenau, Stebbins, Burkett and North. The whole matter was finally referred to the Administrative Council with power to act.

A motion proposed by Mr. Sayle was carried, recommending the rescinding of the resolution made at the Buffalo convention which rebated dues to local associations maintaining their own local employment bureaus, such action to become effective when the plan to be outlined by the Plan and Scope Committee went into operation.

A spirited address was read by J. Kirby, Jr., of Dayton, Ohio, entitled "Progress in Opposing Evils in Trades Unionism," which was received with expressions of approval.

FRIDAY AFTERNOON SESSION.

The Auditing Committee reported that the American Auditing Company had made a favorable report on the books of the treasurer and commissioner.

Mr. Lodge proposed a rising vote of thanks to the Chicago members of the National Association and to the members of the Chicago Metal Trades Association for the magnificent entertainment given to the visiting members and congratulating the Chicago employers in the metal trades for the splendid manner in which they had handled their recent local troubles, with the hope that no further problems of the kind should come up.

The following resolution was offered by Mr. Pfahler:

Whereas, A large number of the members of this association are members of the National Founders' Association, which is formed for the same purpose as this; and

Whereas, The National Founders' Association at its last convention framed a declaration of principles which makes them our close allies in the work of establishing relations between employer and employee which shall be just to both; therefore, be it

Resolved, That the Administrative Council be directed to appoint a committee of three of the members, who shall invite a meeting with a similar committee of the National Founders' Association for the purpose of determining and reporting to their several bodies a plan of co-operation between the two organizations, if such can be effected without destroying any of the plans and purposes for which this organization has been promoted.

This resolution was received with applause and carried unanimously.

New Officers.

The Nominating Committee presented the following names as its candidates for officers for the ensuing year, accompanying the names with eulogies of the candidates in question and with the important parts they had played in the upbuilding of the association: President, J. Willis Gardner, treasurer Gardner Governor Company, Quincy, Ill.; first vice-president, F. A. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio; second vice-president, W. D. Sayle, Cleveland Punch & Shear Works, Cleveland, Ohio (re-elected); treasurer, F. K. Copeland, president Sullivan Machinery Company, Chicago, Ill. Two-year members of the Administrative Council: O. B. Kinnard, Kinnard-Haines Company, Minneapolis, Minn.; C. E. Hildreth, P. Blaisdell & Co., Worcester, Mass.; C. Bermingham, Canadian Locomotive Company, Limited, Kingston, Ont.; Geo. K. Garvin, Garvin Machine Company, New York.

Inasmuch as the selection of Mr. Copeland as treasurer made vacant his place in the list of councilors whose terms expire in 1906, this one-year term was filled by the election of J. Kirby, Jr., Dayton Mfg. Company, Dayton, Ohio. W. H. Pfahler of the Abram Cox Stove Company, Philadelphia, was re-elected an honorary member of the Administrative Council.

Amenities.

Mr. Covell, the retiring president, thanked the association for its hearty co-operation, and bespoke for his successor the same loyal support that had been accorded him. He invited Mr. Gardner, the new president, to take the chair, and the hearty handshake of the two men was greeted with applause. Mr. Gardner expressed fittingly his appreciation of the honor accorded him, and pledged his best efforts in behalf of the body. The manner in which he presided over the balance of the session gave an earnest of the continuation of the aggressive, businesslike administration that preceded.

The other officers one by one thanked the body for its expression of confidence in their zeal and loyalty, and made pledges which, if carried out, will insure a vigorous administration of the association's affairs for the coming year. Votes of thanks were given individually to the retiring president and other officers and to the members of the Plan and Scope Committee for their labors in behalf of the association. Final adjournment was made at 3.15 p. m.

Councilors' Alumni Dinner.

Following the custom of the association, ex-members of the Administrative Council met with present members the evening before the opening of the convention in a reunion in which both social and business considerations entered. The banquet was held at the Union League Club Wednesday evening, 26 members being present. The tables were set in the form of a hollow square and were elaborately decorated. Mr. Covell, the president, acted as toastmaster, and among the speakers upon whom he called were F. H. Stillman of New York, the first president of the association; Commissioner Eagan and Ex-Commissioner Du Brul; J. C. Hobart, Cincinnati; C. Bermingham, Kingston, Ontario; W. H. Pfahler, Philadelphia; O. P. Briggs, Minneapolis, F. K. Copeland, Chicago, and George F. Steedman, St. Louis, all of whom made able and witty addresses. M. H. Barker of Boston sprung a surprise on the chairman by presenting him, on behalf of the Administrative Council, with a superb diamond set watch charm, with chain. Mr. Covell, though taken by surprise, was equal to the occasion and made an apt and eloquent acknowledgment. The discussions held at this dinner and the council meeting which preceded it did much to crystallize thoughts and plans, and favorable results were reflected in the business sessions which followed in the next two days.

Final Council Meeting.

The officers and councillors of the association held sessions Friday afternoon and Saturday, in which important detail and general work was accomplished. Mr. Eagan was reappointed as commissioner and Mr. Wuest as secretary. The deliberations of the council are not made public, but it is known that that body perfected plans that bid fair to result in the admission to the National Association of the Chicago, St. Louis and other large local metal trades associations not now affiliated with the national. It is hoped at least by the committees and members of the local associations that their organizations will accept the fair and liberal proposition which had been outlined by the Administrative Council of the National Metal Trades Association.

Lake Iron Ore Matters.

An Important Sale of Ore Property.

DULUTH, MINN., March 25, 1905.—A very significant and important sale of ore property has just taken place, the seller being a leading independent producer and the buyer one of the largest of the independent steel making companies. Details of the transaction cannot yet be given, but will be announced probably in the course of a few days. The sale materially increases the ore reserves of a company somewhat weak in that important particular and diminishes the supply applicable for outside buying.

Heavy Demand Brings Out Low Grade Ores.

The commencement of the ore movement has been somewhat delayed and is not likely to begin before April 1. Indications still point to a record breaking movement, but some of the exaggerated estimates are being reduced, as there seems to be a little less steam on than there was at one time, when the market appeared to be running away. Inquiries for ore from consumers seem to elicit the unpleasant information that about everything on Lake Superior in the way of standard ore is sold up, at least as high as most mining men care to sell yet, and that there is almost nothing to be had but some siliceous and other "off" ores. More of these ores will be mined than in a long time, and a number of siliceous and limonitic properties that have been idle are being reopened. There is talk of the opening of still more, and the districts that have been especially hard hit for past years are beginning to wheel into line.

A Hoover & Mason Stripping Plant.

The Interstate Iron Company, a Mesaba range corporation of the Jones & Laughlin Steel Company, is preparing to strip its Grant mine, a State property near Buhl, which contains a very large tonnage of a 60 per cent. non-Bessemer ore, similar to Sharon of the Oliver Company. The company is to carry on its own work without contractors, and has decided to install a complete Hoover & Mason clamshell plant, modified to suit local conditions, and to strip with this. This will be the first attempt in the lake region to move a large amount of overburden by anything other than the time honored steam shovel. Permanent towers will be erected outside the area to be stripped, cables will be strung, and grab buckets operated by electricity will operate on these cables, removing the material and placing it in waste bank. This Grant job is expected to last a long time, for there is a full 40-acre tract to be stripped, and the overburden is very deep. This experiment in the use of machinery adopted elsewhere but never tried in mines will be watched with much interest and should add greatly to the knowledge of earth work. Hoover & Mason are engineers and contractors who are not likely to equip a plant without having a pretty sure knowledge of how it will work, and there seems to be a waste of power in the steam shovel method that might be avoided.

The purchase of ore lands on the far western Mesaba continues, chiefly on the part of the Oliver Iron Mining Company, and its area there is now very large. The little village of Bovey, started two years ago by Longyear & Hartley, is developing into a town of some importance, and as soon as the Oliver Company commences its large developments on Canisteo lands it will become a center for much business. It is about seven miles from the Mississippi River, in T. 56, R. 24, and is in the center of a considerable tonnage of ore.

The Scarcity of Good Miners.

Contract work on many large stripping jobs that have been closed down since last year has commenced again, and at all of them as many men as possible will be working soon. The chief trouble this year in the iron regions will be the scarcity of good miners. Work was so quiet last year and the outlook for the winter so poor that many miners left for other fields, or for their old homes in northern Europe or elsewhere. They went with the intention of staying away permanently or until conditions here had changed materially for the better, and they have not yet come back in great numbers. There has been an exodus of high-class miners to Arizona and northern Mexico, who are probably lost permanently. There has been no such loss in common labor, and it is to be had at all the mining towns in quantity; but common labor is of little utility in anything but railroad work and surface mines, and the latter do not employ very much of it. There have been wage adjustments once or twice, and no more will be necessary or are contemplated, for those men who are coming back will return anyway, but it will be some time before the mines can be working full handed.

The extent to which labor has been drawn away is hardly appreciated. In the lake copper country miners from the iron regions have readily found places, and the copper mines have been adding thousands to their forces within the past year. Much is known in the Lake Superior region of Arizona conditions and many important mines there are under charge of lake superintendents, so that a lake miner who wishes to improve climatic conditions has had no trouble in getting work there, and hundreds of the best men have taken advantage of the opportunity of late. Many have gone to British Columbia and some to the lignite mines of North Dakota or the iron district of southeastern Wyoming. Butte has been adding to its mine forces largely within the past 12 months, and the lake has supplied much of the requirements.

Exploration.

An island in Lake Vermilion, near the Soudan mines, that shows a wide and strong outcrop of rather lean, slaty hematite is to be explored this year. Drills are to be employed, and it is expected by the owners that a large body of high grade ore will be found at no great depth.

Efforts are being made to interest capital once more in the eastern Mesaba, and there is a possibility of considerable work through T. 59-14 and east of there. All this country has been explored from time to time, and though there are excellent indications and a large outcrop of the ore bearing member there has not yet been found anything of character to pay. This part of the Mesaba has been subject to the influence of the sheet of gabbro that overflowed from the south, and the formation has generally been changed to a magnetitic schist, quite frequently carrying up to several per cent. of titanium.

In the Baraboo region of central Wisconsin preparations are made for more extensive mining than last year, and there will be a large amount of drilling along the range this year for a distance of not far from 25 miles. Nothing in the way of new mines, however, is likely to come up for some time.

The Michigan copper country is shipping a large amount of lake copper westward, consigned to Shanghai, for Japanese use. From five to six cars a day, or about 200 tons, have recently moved west over the Northern Pacific Road. D. E. W.

Allis-Chalmers General Offices Go to Milwaukee.—General Manager W. H. Whiteside of the Allis-Chalmers Company announces that the company will concentrate its commercial and engineering departments at Milwaukee, where the principal works are located. This means that the general offices of the company, now located in the New York Life Building at Chicago, will be removed on or about May 1 to Milwaukee, where additional office facilities are now being provided at the Clinton street works. The change contemplates the removal of the offices of the vice-president and general manager, controller, assistant treasurer, office counsel, accounting and credit departments. The Chicago district sales office will, on or about April 15, be removed from the New York Life Building to the fifteenth floor of the First National Bank Building, corner of Monroe and Dearborn streets, Chicago.

The Dodge Coal Storage Company has acquired the business of the United Telpherage Company of New York. Communications intended for the latter company should be addressed to the United Telpherage Department of the Dodge Coal Storage Company, 49 Dey street, New York.

THE IRON AGE

1855—1905.

New York, Thursday, March 30, 1905.

DAVID WILLIAMS COMPANY, - - - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - - - ASSOCIATE EDITOR.
RICHARD R. WILLIAMS, - - - - - - - - - HARDWARE EDITOR.

The Tariff and Revenue Situation.

Several conferences have been held during the past week between prominent Senators and Treasury and customs officials with regard to the condition of the revenues and the necessity for an early revision of the tariff. The semi-official announcement by Senator Allison, acting chairman of the Finance Committee, that Congress will be called together in October "to consider freight rate regulation among other things," is accepted in Washington as indicating the President's intention to urge revision upon Congress, but to keep his purpose in the background as long as possible to avoid unnecessary agitation and the consequent disturbance of business conditions.

The Senate leaders are at present considering the subject from two points of view: (1) The necessity for additional revenue, and (2) the desirability from an industrial and economic standpoint of reducing the rates of duty on certain schedules. The former question is now receiving chief attention, and in this connection figures are being compiled by Treasury experts designed to foreshadow as accurately as possible the condition of the public finances at the end of the current fiscal year on June 30 next. Based upon figures secured from the leading ports with reference to prospective customs receipts, it is estimated that at the end of the year there will be a deficit of about $18,000,000, as against a comfortable surplus last year of nearly $10,000,000, leaving out of the calculation the $50 000,000 paid for the Panama Canal. The deficit for the fiscal year up to March 26 is slightly in excess of $24,000,000, but the receipts for the month show a surplus over expenditures, and at a corresponding rate for the remainder of the year the shortage will be cut down to $18,000,000.

A very significant showing is made in a statement compiled by the Treasury experts embracing a comparison of the revenues of the current fiscal year to date with those of last year. These figures indicate very strongly that the full revenue producing capacity of the present customs and internal revenue laws has been developed and that only a small annual increase may be looked for, so that, if receipts are to equal expenditures in the future, either additional means of raising revenue must be adopted or the annual appropriations must be severely curtailed. The total receipts from customs during the current fiscal year to March 26 amounted to $193,496,000, or almost exactly the amount received up to the corresponding date in 1904, when the total was $193,428,000. The receipts from internal revenue for the current year to date amount to $170,529,000, as compared with $170,659,000 last year, a difference of only $130,000. The miscellaneous receipts for the current year to date have amounted to $35,867,000, as compared with $33,863,000 in 1904. The total receipts for the current year to date aggregate $399,893,000, as compared with $397,951,000 a year ago, a difference of less than $2,000,000.

In the table of expenditures, however, there is a striking contrast in the figures for the two years. For the current year to date, civil and miscellaneous expenses make a total of $107,814,000, as compared with $101,073,000 a year ago. On account of the army the expenditures have been $94,199,000, as against $84,101,000 last year, while the navy has cost $86,845,000, as compared with $72,722,000. Even the cost of maintaining the Indians shows an increase, the total this year amounting to $10,941,000, as compared with $8,033,000 last year. The items of pensions and interest payments show little change. The total expenditures to date amount to $423,948,000, as compared with $391,528,000 last year, an increase in outlay of nearly $33,000,000, as compared with an increase in receipts of less than $2,000,000.

While, owing to the very slight prospect for an increase in receipts from the usual sources during the coming fiscal year, those charged with responsibility for the national revenues feel that sooner or later they must inaugurate such changes as will wipe out the current deficit, yet the condition of the Treasury is not such that the present shortage need occasion any alarm. The available cash balance is now slightly in excess of $140,000,000, exclusive of the gold reserve of $150,000,000, and without taking into account large disbursing officers' balances still on hand. It is therefore obvious that so far as revenue is concerned, failure to provide additional resources at the coming special session would in no wise affect the public credit and there is no special reason why any new revenue measures that might be adopted should take effect without ample notice to the business community.

The Minimum Wage Question in Great Britain.

The British labor unions are attempting to procure some very radical legislation, including what is known as the Wages Board bill, which appears to outdo anything that has ever been given serious consideration in America. This bill proposes that a board be established which shall have power to fix a minimum wage that employers may pay to their help. The Employers' Parliamentary Council, which looks after the interests of employers in matters before Parliament, has issued a statement expressing its views of this and other measures introduced by the unions.

The Wages Board bill is emphatically condemned, of course. It is considered preposterous that a government body equivalent in this country to a federal commission should have the power to name to an employer of labor the minimum wage that he may pay. It is pertinently asked, "If the board may establish a minimum wage, why not a maximum?" Why not indeed? As a matter of fact, such a law would be fully as obnoxious to the employee as to the employer. For six centuries wages were fixed by the English Parliament, and the whole law had to be swept away in order to enable the working classes to acquire a voice in the regulation of wages, since which time they have progressed and prospered.

The Wages Board would be a backward step for labor, at the same time that it might be a serious menace to the employer. It would be an everlasting source of trouble between capital and labor. Presuming for the sake of the argument that the board were absolutely fair in its establishment of minimum wages in various industries, it would generally be impossible to satisfy either party. The employer must consider his labor as more or less of a unit. In figuring costs he must consider his entire wage bill. If the minimum wage is put too high for the condition of the business, there must be saving somewhere else, probably in the maximum wage. The skilled workman would be the sufferer. The unskilled workman at a trade would temporarily be the gainer, just as he is the gainer in an establishment governed by union rules.

He would get more money than he would otherwise be considered as earning, but the high class workman must get less. There are exceptions to this rule, but it is a rule, nevertheless. The natural deduction is that the tendency would be to bring all labor closer to a common level regardless of skill.

Employers' Certificates.

Members of the National Metal Trades Association and doubtless of other similar organizations of employers give to faithful workmen certificates, which are in effect records of the experience, faithfulness and capabilities of the workmen holding them. This plan is working so well that already employers' certificates are held in higher favor by the industrious, well-disposed workman than a union card could ever be by such a man. The certificate contains a concrete reward and acknowledgment of work well done, and thus stimulates the man to do better and better work, with the knowledge that surer employment and better wages will follow. Thanks to the increasing prevalence of open shops, these certificates are becoming more influential in securing remunerative employment than are union cards. A union card of whatever color is a declaration that its holder has sold his allegiance to a power that is too often antagonistic to the employer's interest, while the employers' certificate states definitely just how faithfully and intelligently its holder has co-operated with his employers. Unions once had the opportunity to make themselves all-powerful and necessary to the industrial fabric by grading their men up instead of down, by establishing so high a standard of skill and efficiency as a prerequisite to membership in their bodies that employers would give preference to union men; but they have lost this opportunity, and now the employers are stepping in and by adopting the certificate system are championing the cause and guaranteeing the employment of industrious, ambitious men. The employer as an individual, beset by competition from his rival, cannot always be trusted to care for the personal interests of his men; but employers banded together in an association that takes a broad, humanitarian view of the whole situation are becoming a great force for good and the ultimate saviors of American workmen from unwise and often corrupt domination.

New Era for the National Metal Trades Association.

At last week's annual convention, held in Chicago, the National Metal Trades Association made a move that will greatly increase its membership and influence. This step was the adoption of a plan for the formation of local branches in industrial centers wherever a sufficient number of employers in the metal working industries warrants the organization of such branch. The plan also provides for the absorption bodily of such local metal trades associations as can be induced to consent to the merger. In either case the plan provides for a division of dues paid by members, so that the local body would have ample funds to carry on its routine work and yet leave a sufficient contribution to the National Association to give it the financial sinews with which to carry on its campaigns. Local associations, in return for their surrender of control in a large way to the National Association, will have back of them in every conflict with labor the powerful influence, ample capital and active assistance of the national body. While each local will, according to present plans, have its salaried secretary or commissioner and its local employment bureau, it will work under the instructions and experienced direction of the national officers, and be able to call on the national commissioner at any time for skilled and unskilled labor from other communities.

This massing of forces may be expected to greatly reduce the number and shorten the duration of strikes in the metal trades. The knowledge on the part of labor leaders that a firm is a member of the National Metal Trades Association will operate to deter them from declaring a strike in the shop of such an employer and will probably make them more reasonable in their demands. In other words, the mere fact of membership in a strong national body will act as an efficient "strike insurance" for such a firm. It is doubtful, for instance, that the great machinists' strike in Chicago would ever have been declared had such a solid, united fighting force been in existence in that city a year ago.

This new plan will at once greatly increase the membership of the National Association, and will give its officers a working force and a trained lieutenant in every considerable industrial community. The local branch can take quick, decisive action locally in time of emergency and solve many small disputes without resort to the national body and which might otherwise develop into serious conflicts. When the serious conflict does come, branches in every part of the United States will be called upon to supply competent men to take the place of strikers. This concentration is also a broadening movement, because the officers of the National Association have been taught by experience to take a broad view of the whole labor situation, and are quite as ready to discipline a member who is disposed to take unfair advantage of his men as to punish a labor leader for calling out his men unjustly.

Municipal Burdens on Local Industries.

Cities whose affairs are in the hands of wise and discerning men are generous with their industries. Overtaxation of manufacturing property is a foolish policy. So is overcharging for water furnished from a municipal water supply. Yet a tendency to do both exists in many places, especially in older cities where industries are regarded as unquestionably permanent fixtures. The idea becomes ingrained that because these industries have existed for years no condition could bring about their removal to other cities; that because they have prospered and enlarged nothing could prevent their continuing to increase in importance. Both premises are wrongfully taken.

A manufacturer has to compute his costs very carefully in these days of sharp and close competition. He cannot afford to pay a greater percentage of taxes than his competitor in another city. The nature of his business may require great quantities of water for which he has to pay his city. If the charge for water is higher than his rival has to pay, this item may enter into the cost of the product to an extent sufficient to affect prices when it comes to competition for business. The manufacturer must get business at a profit, or he will require less labor in his works, or he will have to pay less wages. In either case his city is the loser. It is always better for owners of other property in a community to pay larger taxes and larger water rates that the manufacturer may pay less. His property should be assessed for taxation at a minimum figure, not for his own benefit any more than for the benefit of all those people whose property values and whose business depend upon the general prosperity of the community.

A Permanent Factor of Expense.

Discussing the waste of restricted output in the National Civic Federation *Review*, Louis D. Brandeis of Boston shows clearly that no greater mistake can be made for the workingman himself than to limit the output of the individual. Taking up a related line of thought, he says: "Another great factor of waste in most businesses is the cost of inspectors, foremen and assistant foremen—men whose services are in large part required only because so many employees work, not as hard or as well as is possible, but only hard enough or well enough to pass the inspector or foreman." This is a form of waste, or factor of expense, which we fear cannot be overcome. Mr. Brandeis says that trade unions should teach a man that it is a disgrace to manhood to require watching. Even then, however, it will be found that poor, imperfect human nature will assert itself. The inspector or foreman, like the poor, must always be with us.

CORRESPONDENCE.

Technical Training in Industrial Costs.

To the Editor: In the letter from me published in your issue of March 9, in giving the names of technical colleges in which instruction is now given in industrial management and industrial accounting, I inadvertently omitted to mention Stevens Institute, Hoboken, N. J. (of which I have the honor to be a trustee), the president of which, Dr. Alexander C. Humphreys, has for some years devoted a large share of his own time and work to the subjects above referred to.

Probably no other technical school in which these subjects form a part of the regular course of instruction has made such progress in this direction. President Humphreys' lectures cover instruction in the business features of engineering in general and in shop cost in particular. Industrial accounting is explained and discussed in them with unusual clearness and fullness, and the fundamental principles of industrial management are also broadly indicated and explained. On page 13 of the annual catalogue occurs the following statement relative to these matters, viz.:

Business Engineering.—Before beginning the instruction in this department the students are led to appreciate that engineers must practice their profession in conformity with commercial conditions and limitations. Then by means of lectures and recitations instruction is given in Accounting, Depreciation, Shop Cost, Analysis of Data, Law of Contracts and Business Methods in general. This work is confined to the senior year. (See pp. 70 to 72 and 103.)

As a matter of information to those whom this subject interests and in justice to Stevens Institute, may I ask you to give publicity to the foregoing facts?

HENRY R. TOWNE.

NEW YORK, March 22, 1905.

The new locomotive that is being built for the Southern Pacific Railroad by the International Power Company is being awaited with some interest, as it will be of radically different construction from anything now in use. If the experimental trial proves successful more will be ordered by the same railroad company immediately. The engine is to be a combination of the Diesel engine and the Hoadley-Knight patents for internal combustion oil burning engines. General Manager Julius Knuttschmitt of the Southern Pacific is said to be favorably impressed with the possibilities of the new locomotive, which is one that will be peculiarly adapted to the stiff grades and long stretches of desert on the Southern Pacific, where feed water for the boilers is difficult to obtain. A Hoadley-Knight improvement to the Diesel engine, recently patented, is claimed to nearly double the power of the engine, as each stroke, instead of each alternate one, is made a working stroke.

PERSONAL.

H. P. Bope, vice-president of the Carnegie Steel Company, Pittsburgh, has been elected president of the Park Bank in that city.

J. A. Phillips has been appointed manager of the plant of the Westmoreland Steel Company, Greensburg, Pa., manufacturer of tool steels, die blocks, forgings and high grade steel bars. Mr. Phillips was formerly connected with Howe, Brown & Co., and afterward with the Crescent Steel Company, both of which were absorbed by the Crucible Steel Company of America.

H. A. Wheeler, having completed his engagements in the Mining Department of the World's Fair, has reopened an office as consulting mining engineer in the Roe Building, Pine street, St. Louis.

George M. Woolsey, who has been secretary of the Robins Conveying Belt Company, New York, has been elected a member of the New York Stock Exchange.

L. H. Miller has been made general manager and treasurer of the Providence Steel Casting Company, Providence, R. I., succeeding E. M. Shaw, the founder of the business, who has resigned.

H. W. O'Dowd, for eight years superintendent of the W. M. Crane Company's factory, Peekskill, N. Y., withdraws from the company May 1.

Frank Rockefeller, Cleveland, Ohio, has been elected president of the Buckeye Steel Castings Company, Columbus, Ohio, to succeed the late W. F. Goodspeed.

F. F. Fitzpatrick, representative of the Railway Steel Spring Company in St. Louis and the Southwest, has been appointed general sales agent of that company, with offices in New York.

John S. Edgar, formerly sales agent of the Wisconsin Graphite Company in the Pittsburgh district, has been appointed general sales agent for the New Castle Paint & Varnish Company, New Castle, Pa., a corporation recently formed for the manufacture of structural steel paints and graphite.

M. V. S. Wilson, formerly with the American Sheet & Tin Plate Company, Pittsburgh, has been appointed general manager of the Portsmouth Steel Company, Portsmouth, Ohio.

Max Rotter, the author of the paper on "The Use of Waste Gases in Large Gas Engines" published in *The Iron Age* of March 16, is engineer of the gas engine department of the Allis-Chalmers Company, Milwaukee, Wis.

H. M. Montgomery, who for several years has been connected with the New York office of the Alberger Condenser Company, has assumed charge of the company's new office at Chicago.

W. P. Boger, late superintendent of the Central Works of the American Iron & Steel Mfg. Company, Lebanon, Pa., has resigned to become manager of the West End Rolling Mills at the same city. William H. Catterall of Lebanon has been named as his successor. W. C. Cutler, Portland, Maine, has succeeded Mr. Catterall as night superintendent of the Central Works.

Frederick Butler has been made treasurer of the Reading Iron Company, Reading, Pa., succeeding George B. Harris, who has become vice-president of the Lehigh Coal & Navigation Company.

The mallet articulated compound locomotive, which was built for the Baltimore & Ohio Railroad and has attracted considerable attention from its peculiar construction in that it has two independent sets of driving wheels driven by separate engines, has been in service for over a month and seems to be more than fulfilling the expectations of its designers and builders. It is reported that one fireman is able to keep up steam without trouble, using an inferior grade of coal.

Progress in Opposing Evils in Trades Unionism.*

BY J. KIRBY, JR., DAYTON, OHIO.

Has organized labor reached the pinnacle of its programme of industrial control, or has development of organized opposition to its further encroachment upon the rights of American citizens stayed its tide, and with the mighty wave of righteous indignation that has swept over the land during the past few years reversed its course and silenced its guns? This is a question which at this time it is well that we pause to consider.

Until a very few years ago there were but few men who possessed the courage to resist the encroachments of organized labor upon the constitutional and natural rights of citizens and to make the fight necessary for the maintenance of those rights, because most men were all but paralyzed with fear and felt that single handed and alone there was nothing that could be done to preserve to themselves those rights when they were called upon to surrender the same to the highwayman who demanded them.

Autocratic Power of a Few Labor Leaders.

We had reached a stage in this country where it was possible for a few men to decree unto themselves that the wheels of any of our great enterprises should stop revolving until such demands as they might see fit to make upon them were complied with.

That the triumph of such a pernicious system confiding in its own strength and ignorant or indifferent as to consequences would mean disaster to our industrial and commercial affairs and create a condition of stagnation, adversity and want, in place of prosperity and plenty, no man of intelligence will question, and that is exactly the condition organized labor has been leading us up to, without, until recent years, any organized opposition, while on the other hand the greatest encouragement and aid to its progress have come from those employers who have readily yielded to its demands and turned traitors to their employees who would otherwise have stood loyally by them. The next greatest aid and encouragement come from the general public, which has been blind to the fact that in the end it must be the sufferer; but it is now rapidly being educated to a realization of that fact.

Encourage Legitimate Trades Unions.

I have been connected with the employers' movement against the evils of trades unionism from its beginning, and I wish to say to you, gentlemen, that I have never found any disposition on the part of any one to oppose trades unions as such and when conducted within their legitimate boundaries. We have all heard very much about the right of labor to organize, a right which, so far as I know, is not disputed or denied to labor.

(Here Mr. Kirby read an address delivered by Thomas Fitch, vice-president of the International Brotherhood of Locomotive Engineers, at the annual convention of that organization held in Los Angeles in 1904, portions of which address have heretofore appeared in these columns. Continuing, Mr. Kirby said):

Unions Here to Stay.

Labor unions are not made up of locomotive engineers; if they were it is not likely that this convention would be assembled here to-day. But be the labor union a good or a bad union, it is with us and will be as long as there can be drawn from the earnings of the men who labor with their hands revenue with which to pay labor shirks' salaries to officer them, and their activity and influence will be measured by the force of organized opposition with which they have to reckon. It is the greatest problem of the day and can be solved only by thorough and systematic organization opposed to its every attempt at interference with the constitutional and God-given rights of the citizen. Trade agreements will not solve it. The National Founders' Association tried that method for ten years and has finally abandoned it in disgust.

Arbitration Unjust.

Arbitration will not solve it. That has been declared a failure over and over again. If I am held up for my belongings and I refuse to surrender them, why should I submit the question to arbitration and take my chances on having to surrender one-half of them to the highwayman who held me up, and then on the next hold up surrender half of what is left, and so on until the highwayman gets it all? If I have something which belongs to me and another man wants and demands it of me, what is there in the proposition that should be submitted to arbitration, and who but a timid man or a coward would willingly submit to such a proposition? If I demand of a man that he work for me for $2 a day and he is unwilling to accept less than $4, or perhaps not work for me at any price, what a ridiculous proposition it would be for me to propose that the question be settled by arbitration; and yet that is exactly what arbitration means when a labor union demands of an employer that which he is unwilling to grant, and which if he does grant or consents to arbitrate is because of fear of persecution if he doesn't. That is compulsory arbitration in the true sense of the word and will never solve the labor problem.

All Wealth Does Not Belong to Labor.

When the employer and the public shall give the howling militant socialist to understand that labor does not produce all wealth and that all wealth does not belong to labor, and shall give to the free and industrious workman the protection and support to which he is entitled in his right to life, liberty and the pursuit of happiness, then, and not until then, will the labor problem be solved.

Dawn of a Better Day.

Let us now consider what progress has been made along these lines and the cause or causes that have brought about the better conditions which exist to-day over those of a very few years ago and which can be attributed to no other cause than that of organization. As we have organized labor with us to stay, so, too, we must maintain counter organization to compel it to confine itself to reason and keep within the bounds of decency and the law. Indeed, such organization is essential to the future welfare of this nation and the importance of it cannot be overestimated. Five or six years ago the unions had things pretty much their own way in many sections of the country where to-day they are docile and quiet, or have practically disintegrated and gone to pieces.

The employers' and citizens' organizations are responsible for the change. They have aroused public sentiment against the vicious and brutal operations of the slugging committees and flying squadrons of organized labor. They have stirred up our lawmakers to a realization of the increasing dangers which these men were piling up against our American institutions and of their antagonism to the individual liberty guaranteed to all our citizens by the Constitution of the United States.

Potency of Education.

In brief, the educational work of these associations has already produced a wonderful effect upon public sentiment and has turned its tide against the methods employed by organized labor to enforce its demands. But, notwithstanding the work that has been accomplished by these associations, there are still greater and more lasting results to be accomplished through organization, work that cannot be accomplished in any other way, and which the continuity of our Government and its free institutions demand shall be accomplished. Therefore, it is of the utmost importance that every true American citizen contribute his full share toward the support and maintenance of such associations that they may gradually become more perfect and better systematized, and their educational propaganda reach out to counteract the great mass of vile matter now being scattered over the country for the purpose of breeding hatred and discontent, and that it may be permanently possible for men to go to and from their occupation without fear of being waylaid or their wives and children jeered at and insulted because of their exercising their rights as American citizens.

* Read before the National Metal Trades Association, Chicago, March 24.

Recently the night turn on the 140-inch plate mill at the Homestead Steel Works of the Carnegie Steel Company, Homestead, Pa., rolled 449 tons of plates, which breaks all previous records at this time.

The Interstate Iron & Steel Company.

A company has just been organized under the above name to take over the property of the former Emlyn Iron Works, whose plant is at East Chicago, just outside of the Chicago city limits. It will be recalled that the Emlyn Iron Works last June went into liquidation and that the Equitable Trust Company of Chicago was appointed receiver. At that time it was known that the insolvency proceedings were largely voluntary, as the company met all its outstanding obligations except the claims upon it held by its stockholders. The officers of the new corporation are: Silas J. Llewellyn, president and general manager, and George F. Davie, vice-president and treasurer. They, together with John R. Walsh, Selig Morris and George R. Stewart, are directors. Mr. Llewellyn has been a prominent figure in the iron and steel industries of the West for many years, having been associated with the Illinois Steel Company at Milwaukee and later at Chicago; then with the Republic Iron & Steel Company, and for the last few years with the International Harvester Company. Selig Morris and George F. Davie are proprietors of the large business of S. Morris & Co., Chicago, dealers in old iron and steel. John R. Walsh is president of the Chicago National Bank and financial head of the Southern Indiana Railway, the Bedford Quarries Company and other large interests. George R. Stewart was secretary of the old Emlyn Iron Works and has been elected secretary of the new company.

During the ten months that have elapsed since closing down the old plant a great deal of work has been done in putting it into thoroughly modern shape. But the important improvements already made are only a beginning, as it is the intention of the new company to put in additional equipment and to enlarge the capacity of the plant in every way. Among other things provision will be made for rolling angles up to 4 inches, channels, small beams and special shapes. The business of rolling special shapes for various industries will receive special attention. While the old Emlyn Iron Works was very largely a bar iron mill, the new plant will be a larger factor in steel bars and shapes than in iron. The present plant at East Chicago, which was built in 1900, consists of seven double and six single puddling furnaces, one piling furnace, five heating furnaces and one train each of 8, 9, 16 and 18 inch rolls. The mill will be started up by the new company on or before May 1. Temporary offices of the Interstate Iron & Steel Company are now on the fifth floor of the First National Bank Building, Chicago, but the permanent offices will shortly be on the seventeenth floor. The new company promises to be an important factor in the iron and steel industries of the West and has already booked orders sufficient to guarantee a busy rolling programme.

The Otis Elevator Company.

In the annual report of the Otis Elevator Company a decrease in net earnings is shown of only $17,000. The surplus for the year is given at $200,000, which makes the total $1,400,000. Edmund A. Russell, Godfrey R. Redmann and W. S. Spalding were elected directors at the annual meeting held March 20, to fill vacancies in the board caused by the deaths of N. P. Otis, H. R. Reed and John A. Roche. All the other directors were re-elected. Following is the detailed financial statement for the year ended December 31, 1904, with comparisons with the previous year:

	1904.	1903.	Decrease.
Net earnings	$891,016	$908,055	$17,039
Preferred dividend	335,970	332,670	*3,300
Balance	$555,046	$575,385	$20,339
Common dividend	127,006	127,006	.....
Balance	$428.040	$448,379	$20,339
Depreciation	228,040	248,379	20,339
Surplus	$200,000	$200,000	.....
Previous surplus	1,200,000	1,000,000	*200,000
Total surplus	$1,400,000	$1,200,000	*$200,000

* Increase.

The condensed general balance sheet, as of December 31, shows:

	1904.	1903.	Decrease.
Assets.			
Plant account	$10,003,347	$10,274,761	$271,414
Cash	552,440	454,235	*98,205
Bills receivable	35,954	57,389	21,435
Accounts receivable	2,531,460	2,612,326	80,866
Inventory	1,220,145	1,271,458	51,313
Totals	$14.343,346	$14,670,169	$326,823
Liabilities.			
Preferred stock	$5,599,500	$5,599,500	.....
Common stock	6,350,300	6,350,300	.....
Gold notes (4 per cent.)	400,000	950,000	550,000
Accounts payable	382,548	359,371	*23,177
Preferred dividend	83,992	83,992	.....
Common dividend	127,006	127,006	.....
Surplus	1,400,000	1,200,000	*200,000
Totals	$14.343,346	$14,670,169	$326,823

* Increase.

President W. D. Baldwin ascribes the fairly good showing for last year to the company's increased foreign business. He further says: "During the year 1904 payment of $550,000 of the 4 per cent. gold notes has been anticipated, and they have been canceled, leaving a balance outstanding of but $400,000. Of this amount $200,000 becomes payable on January 1, 1907, and the balance on January 1, 1908, the payment of which it is reasonable to expect, in view of what the company has done in the past, will be anticipated before maturity."

The St. Louis Coal Testing Plant.

The United States Geological Survey has issued a very interesting report on the coal testing plant which was erected at the Louisiana Purchase Exposition at St. Louis, but which was not put into operation until September of last year. The results of the first series of tests made under the direction of E. W. Parker, J. A. Holmes and M. R. Campbell are almost startling, and hold out so much promise that it is highly satisfactory to learn that a round sum has been appropriated by Congress to continue the work. The larger part of the equipment was contributed by manufacturers, among them being the Heine Safety Boiler Company, the Allis-Chalmers Company, R. D. Wood & Co., the Westinghouse Company, C. O. Bartlett & Co. and others. Great caution was exercised in collecting the sample shipments of coal, in recording results and in the analytical work. The committee summarizes as follows the results indicated by the preliminary tests:

1. The tests in the steam boiler plant of 65 carload samples of coal from 17 States indicate the high steam producing capacity of American coals, and that the quality of many of these coals may be improved by washing.

2. Most of the American bituminous coals and lignites can be used as a source of power in a gas producer plant.

3. As indicated by comparative tests of 14 bituminous coals from nine States, the power efficiency of these coals when used in the gas producer plant is two and one-half times greater than their efficiency when used in the steam boiler plant; or, in other words, 1 ton of these coals used in the gas producer plant has developed, on a commercial scale, as much power as 2½ tons of the same coal when used in the ordinary steam boiler plant.

4. Some of the lignites from undeveloped but extensive deposits in North Dakota and Texas, when tested in the gas producer and gas engine, have shown unexpectedly high power producing qualities, such as promise large future developments in those and other States.

5. Some of the American coals and the "slack" produced in mining these coals can be briquetted on a commercial basis.

The value of the results of these investigations is, of course, not limited to the coal producing sections of the country, but extends through every State and Territory where coal or other mineral fuel is used as a source of power. Thus, in the New England States no coal is mined; but in the year 1900 the steam power produced through the consumption of coal and used for manufacturing purposes in these States cost approximately $50,000,000. The development of this power through the more efficient methods suggested by these investigations would

mean a saving to the manufacturers in these States of $15,000,000 to $20,000,000 per annum.

As another illustration of the way these investigations may influence the affairs of the nation as a whole it may be stated that there were used in the naval vessels of the United States in 1903 approximately 500,000 tons of coal, costing $2,500,000. If the future gas producer and gas engine can be substituted on our battle ships and cruisers for the existing steam boilers and engines the saving in the cost of coal would be not less than $1,000,000 per annum, or, what would be of far greater importance, the distance traversed by each ship without coaling would be more than doubled.

The fact that the coals and other mineral fuels used in the United States during 1904 cost the consumers approximately $1,500,000,000 indicates the magnitude and importance of the problems under investigation by the Geological Survey in connection with its coal testing plant.

Foundry Costs.*

BY RALPH BOWMAN, BUFFALO SCALE COMPANY.

In analyzing production and in ascertaining the cost the proposition *per se* is the same with all foundries, but the method must differ with each individual foundry. This is caused by the difference in castings and the varied nature of each foundry's business. "One man's meat is another man's poison" often holds good. There are three divisions in foundry cost to be considered:

1. The material, or metal, composing the cupola charge.
2. The general expenses and supplies.
3. The actual molding time of the molder.

The first and third divisions, the material and molding labor, show in themselves what they are. The second division consists of overhead charges, such as taxes and insurance, or rent, improvements and repairs; contingent or sinking funds to cover depreciation; losses through bad debts, &c.; direct charges, such as foreman's wages, wages of cupola tenders, core makers, cleaners, general roustabouts, and the molders' time cutting sand and pouring metal; and also the supplies, sand, facings, riddles, shovels, crucibles, flasks, &c. These divisions having been made and that cost ascertained, the cost of castings may be found in the following manner:

The three divisions are added together and from this sum is deducted the value of the scrap, &c., recovered in gates, sprues and pig bed. Into this remainder is then divided the total number of pounds of good castings, and the result is the cost per pound of the product.

On the other hand, the first two divisions (that is, the cupola charge and the general expenses and supplies) may be added together and the value of the scrap recovered is then deducted from their sum. This remainder may be divided by the number of pounds of good castings, giving thereby the cost per pound of the metal in the castings. The cost of each individual casting is then found by multiplying its weight by the metal rate per pound and adding to the result the molding time of the molder spent on the casting.

Small and light castings would quite likely take the first method, while large, ponderous and heavy castings would very likely take the second. Therefore the rules for figuring foundry costs cannot be laid down in a hard and fast manner, a foundry's individuality and the information it desires necessarily qualifying the method and the form of analysis.

Again, it is debatable to what exact account many items of foundry costs should be charged. General officers' salaries, for instance, may be considered a part of the selling expense. Plant depreciation may go into general expense, or it may be deducted from net profit, the result being called actual profit. This scheme is frequently all right for a big manufacturing plant, but generally it proves quite wrong for a jobbing foundry. Depreciation may also be taken care of by a sinking fund. I might say here that depreciation is an item which many times lacks consideration, and that its disregard cannot be too strongly condemned.

Depreciation should be taken care of at every closing of the books. Plants will deteriorate and machinery, kept even in the best order, will sometimes become obsolete by reason of improvements. The owner therefore who does not take this item into account gives his business at one time credit for more than it is actually doing and at another time is unjust to it when the loss falls in one jump, while on the part of a corporation it is manifestly unfair to ask future stockholders to assume such burdens, to cover which a portion of the former dividends should have been retained.

Other overhead expenses, such as losses through bad debts, also deserve consideration, and should be arranged for much in the same way as depreciation.

Under direct charges, while new flasks are quite properly charged to plant improvements, repairs to flasks, or flask renewals, although taken care of to a certain extent by depreciation, ought to be charged to the metal. They are really supplies, for flasks are used up like files, some portion being taken by every casting. Again, it may be correct to charge the flask directly to the job for which it is made.

Another debatable item is core making. As a rule, however, the cost of cores is put into general expense, for it takes a very expensive core indeed to make an appreciable showing.

If it is a matter of actual molding, theoretically the labor should be charged directly to the job, but this is frequently found impractical where the castings are comparatively small and of great variety. Dividing the castings into classes, such as light and heavy or light, medium and heavy, and keeping track of the molding labor on each class frequently produces satisfactory results. The results from the latter scheme, though, should be checked from time to time by comparison with the cost of actual molding labor on individual castings.

This is the idea in general of figuring foundry costs, but of course any business analysis cannot end with costs. The question of profit and loss is to be considered. The cost of the product being known the cost of the sales is therefore known. The cost of the sales being deducted from the sales the gross profit appears, and by deducting the selling expense from the gross profit the net profit is shown.

There is also much to be said of the value of a foundry's analysis outside of the bare knowledge of the cost of its product. The results of different formulas of cupola charges, for one thing, are read like a barometer. The labor must account for itself. The expenses tell their own tale. The coke shows how many pounds of metal each pound of it is melting. The leakage appears. Defective castings cannot be hidden. All kinds of molding comparisons are made. Patterns come in for criticism and are sent to the pattern shop for more draft, to have corners rounded, to be shaped differently and parted in another way so as to save cores, and for all kinds of repairs and improvements. (I know of one case where a pattern was remade and the parting of it differently saved the making of ten cores. It is not speaking too strongly to say that a foundry manager can sit in his office and learn from analysis what is going on even better than if he stood out in the foundry. To sum it all up, where foundry costs are ascertained "guesstimating" is changed into estimating.

* Paper read before the Buffalo Foundrymen's Association, March 21.

The Treasury Department regulation of December 26, 1903, establishing a rate for the allowance of drawback on hoops manufactured from imported steel billets by the Sharon Steel Hoop Company, Sharon, Pa., and used by the Standard Oil Company in the manufacture of barrels, has been extended, as far as applicable, to cover exportations of hoops and bands manufactured by the Pittsburgh Steel Company wholly from imported steel billets.

The National Voting Machine Company is now located permanently at 27 Capitol avenue, North, Indianapolis, Ind.

The Ronay Ore Briquetting Process.

The briquetting of iron ore has been attracting increasing attention with iron makers in this country for a number of reasons. While furnacemen have learned in recent years to handle fine ores to better advantage and to minimize their drawbacks, yet they fully realize those drawbacks and would welcome effective means for briquetting ore and flue dust economically. Since the opening of the Mesaba range the proportion of fine ores in furnace mixtures has risen enormously and rapidly, and the physical condition of the ores has become a factor of importance. In other parts of the country the development of magnetic concentration on a profitable basis has thrown large quantities of very fine ores on the market. In the Pittsburgh district the furnaces in the immediate vicinity of the city have been enjoined from using fine ores, as causing injury to adjoining residential property, so that they are most keenly interested in the solution of the problem of preparing fine ores for the furnace.

The modern practice of utilizing blast furnace gas for power makes it probable that with its wider introduction briquetting will assume further importance, since it is recognized as essential now that the gas be washed to remove the dust before it enters the gas engines. Briquetting will go far toward making the utilization of furnace gas for engines possible, by cutting down the quantity of dust at furnaces which must use fine ores.

The briquetting of flue dust, now practically wasted, is also a consideration of much moment.

All the work thus far done on a large scale in the briquetting of fine ores has resulted in commercial and technical failure. It is believed that this is largely due to the fact that it has been hitherto deemed necessary to use some form of a binder, lime in some form being a favorite—a natural course, since lime additions are necessary in most cases as a flux in any event.

Convinced that a binder is only effective during a small portion of the descent of the stock in the blast furnace and that it is important to have the briquette of such texture and character that the reducing gases may have effective access, Arpad Ronay, of Budapest, Hungary, some years since took hold of the solution of the problem along novel lines. He started with the conception of briquetting without any binding material whatever, depending upon high hydraulic pressure to agglomerate and shape the fine ore. This is followed by a second operation, that of drying or baking in a current of carbonic acid and carbonic oxide gas, which hardens the briquette so that it can readily undergo the handling incident to charging and the attrition in its course down the furnace. The temperature at which this baking is done is low, and as a rule should not exceed 600 degrees Celsius. The ratio between carbonic oxide and carbonic acid gas in the baking is adjusted to the material treated, and must be below the temperature at which calcining or sintering takes place, the latter affecting adversely the reduction of the ore.

For the introduction of the process into this country the American Metallurgical Company was formed by G. Leve, 114 Liberty street, New York, and two hydraulic presses were erected at the crane plant of the Empire Iron & Steel Company, at Catasauqua, Pa. These were built by Roeck of Budapest. Each press has a 21.5-inch power cylinder, the head of the first one having six working plungers, 4 inches in diameter, with 8-inch stroke, which form the briquettes, six being made simultaneously. Between the head of the press proper and the forming cylinders is a movable intermediate head, which may be made to clear the press by sector gearing, operated by a small hydraulic cylinder. Movable at right angles to it in the same plane is a feeding box, similarly operated by a small hydraulic cylinder. After the charge of ore in the six cylinders has been compressed to briquettes the intermediate head is moved laterally and the working plungers are raised enough to expel the briquettes from the mold. The feeding box with a fresh charge is moved into the press, its front edge pushing off the finished briquettes to a conveyor belt which carries them automatically to the baking oven. The feeding box brings the fresh charge for the plungers, a sliding plate, also operated automatically, having cut off the supply of ore from the feeding hopper before the movement began. Since the erection of this plant Mr. Ronay has designed a new press with a swinging table, which can, if necessary, supply two presses. This press is now about to be operated at a plant in Berlin.

The baking chambers, fired with waste furnace gas, consist of an ordinary long oven in which the briquettes are allowed to roll on their cylindrical sides along inclined channels, special feeding and discharging drums being provided to automatically handle them. They are carried to the chambers by a belt conveyor.

Under somewhat adverse circumstances a test of the Ronay process was made at Catasauqua on Chateaugay concentrates, the briquettes averaging in weight 8.85 pounds. There were charged about 105 tons of briquettes. It was observed that as soon as the briquettes had been charged exclusively the furnace worked better, the gas being in larger quantity and nearly dust free. The gas analysis was favorable, showing 5 to 6 per cent. of carbonic acid and 29 to 35 per cent. of carbonic oxide by volume. While not conclusive, because of the relatively small quantity of briquetted ore charged, the results indicated clearly a better utilization of the fuel and more favorable working of the furnace.

Magnetic concentrates were chosen because they represent the most difficult material to handle in briquetting. Tests made with other materials, like exceedingly fine, dusty brucatites, yielded briquettes physically excellent in character. The results are regarded as decidedly encouraging and as proving the underlying principle of utilizing hydraulic pressure exclusively for forming the briquettes in the place of the usual binder, and of hardening the briquettes by the subsequent baking operation. There is now approaching completion a second testing plant at Berlin, Germany, in which the treatment of a number of other materials, in which agglomeration of fines is technically vital and economically important is to be carried out.

OBITUARY.

JOHN O'BRIEN, president of the John O'Brien Boiler Works, St. Louis, Mo., and a former president of the American Boiler Manufacturers' Association, died March 12, aged 60 years. He was born in Ireland, but left that country with his parents when ten years of age, going directly to St. Louis, where he learned the trade of a boiler maker. This he followed until 1872, when he organized the John O'Brien Boiler Works. A widow and three daughters survive him.

ANDREW G. CURTIN, JR., a Philadelphia iron and coal merchant, died March 18, aged 58 years. He was born in Bellefonte, Pa., and was a nephew of Andrew G. Curtin, the Pennsylvania war Governor.

JAMES TATHAM, the surviving member of the firm of Tatham Brothers, lead manufacturers, 226 South Fifth street, Philadelphia, died March 24, aged 85 years.

The Buffalo Foundrymen's Association.—The regular monthly meeting of the Buffalo Foundrymen's Association was held in its headquarters, 23 Builders' Exchange, March 21. President Lyman P. Hubbell called the meeting to order and 29 members responded to the roll call. Several very important matters were taken up for action, especially the Anti-Injunction, Eight-Hour and Employers' Liability bills now before the New York Legislature. A resolution instructing the secretary to communicate with the 11 members representing Erie County, voicing the opposition of the association to these bills, was adopted. After disposing of the regular order of business the chair introduced Ralph Bowman, associated with the Buffalo Scale Company, who read a very interesting paper on "Foundry Costs," for which a vote of thanks was tendered him.

NEWS OF THE WORKS.

Iron and Steel.

The John Illingworth Steel Company, Frankford, Pa., has recently added to its equipment two hammers, one of 2500 pounds capacity and the other of 3500 pounds capacity, and announces that its mills are now in complete operation, making tool steel and open hearth and crucible specialties.

The Shenango Furnace Company, Pittsburgh, has recently made an increase in its blowing capacity at the Sharpsville, Pa., works by the installation of another standard type vertical Reynolds-Corliss engine, with steam and air cylinders of 44 and 84 inches diameter, respectively, and a 60-inch stroke. The order was a duplicate of one placed shortly before by the same company.

The Tennessee Coal, Iron & Railroad Company's Bessemer rolling mill at Bessemer, Ala., has installed a new roughing mill, which will materially increase the output of the plant. The old guide mill has been moved and connected in tandem with the new roughing mill, and both will be driven by a new 100 horse-power engine just installed. This will enable larger billets to be handled.

The Greenville Mill of the Carnegie Steel Company, at Greenville, Pa., which has been idle for more than a year, will be placed in operation as soon as the plant can be made ready. The works contain 30 single and 4 double heating furnaces and 3 trains of rolls, the product being iron and steel bars and skelp and the annual capacity 25,000 tons.

Henry Gilbert & Son, 219 Market street, Harrisburg, Pa., are in the market for a stock of Stubbs steel in wire sizes.

The Amsler Engineering Company, engineer and contractor, Empire Building, Pittsburgh, has received a contract for the excavations and foundations for the new plant of the Crescent Forgings Company, at Verona, Pa., near Pittsburgh, to consist of four large buildings, including boiler and engine house, forge shop, machine shop and warehouse, as well as a crane runway for handling the product. It has also been awarded a contract for the erection of the sheet, pair and annealing furnaces, which are to be installed in the tin plate mill of the Atlanta Rolling Mill & Tin Plate Company, Atlanta, Ind. The four sheet furnaces will be 8 x 8 feet and the pair furnaces will be 7 x 8 feet. The annealing furnace will be 16 x 20 feet. The Atlanta company has four hot and four cold mills, with room for two additional. As soon as the furnaces are installed the plant will be placed in operation.

The recent fire at the plant of the Maryland Rail Company, Cumberland, Md., did but little damage to the boiler house and electric light plant, which have since been repaired. The mills, which were only shut down for about one week, are again running on double turn.

The sheet mill department of the Inland Steel Company at Indiana Harbor, Ind., resumed operations Monday after a shut down of six months on account of labor troubles. It was manned with nonunionists. There is only one union shop remaining in the Calumet region.

The creditors of the Continental Iron Company at Wheatland, Pa., have saved over $78,000 by contesting the claim for $115,000 of the Girard Iron Company, owned by the A. M. Byers estate of Pittsburgh. The referee in bankruptcy has given an order finding that a preferred claim secured by mortgage of $7773 and a percentage claim of $29,020, not secured, are due the Girard Iron Company and all other claims are disallowed. This will make a material difference in the size of the dividend to be declared in the favor of the Continental Iron Company.

The Illinois Steel Company's plant at Buffington, Ind., will be doubled in capacity in order to fill a contract with the United States Government to furnish material for the Panama Canal work. It will then give employment to 2000 men.

For the first time in many months every available furnace in Berks County, Pa., is in operation, the stacks at Macungie and Robesonia, started last week, being the latest to go into blast. The estimated weekly capacity is about 16,000 tons. Three stacks in Lehigh and the same number in Lebanon are being prepared for starting. Four are now working in Lebanon County. A month ago only one was in blast.

Creditors of the South Pittsburgh Iron Works, Claysville, Pa., which has been in the hands of receivers for some months, have decided to accept 50 per cent. of their claims in cash. The concern has been reorganized, new capital put in, and the plant is expected to be put in operation early in April. The total indebtedness of the concern was about $102,000, and it is expected this will all be paid off 50 cents on the dollar within a week or two.

The Bechtold Crucible Steel Company, composed of Pittsburgh and Cleveland parties, proposes to erect a plant at Canal Dover, Ohio, to make tool steel under a new process of W. L. Bechtold, who is interested in the company.

The work of excavating for the foundation of the sixth great blast furnace of the Lackawanna Steel Company, Buffalo, has been begun, and work of construction will go on as rapidly as possible. The new furnace will be practically a duplicate of the five furnaces already built, and the blast for the entire six furnaces will be furnished by what is said to be the largest battery of gas engine blowers in the world. The engines are of 2500 horse-power each and of the upright type. The whole series of engine blowers will be connected, so that if one of them breaks down the furnace to which it belongs will not have to go out of blast, but can be supplied by the other five. The contract for the last of the six engines will be placed very shortly.

General Machinery.

The Clinton Novelty Iron Works, Clinton, Iowa, is putting up a two-story brick building, 25 x 85 feet. The company is in the market for a power hammer, steel cases for bolts, rivets, cam and set screws.

A company is being organized at Portland, Ore., to build rotary engines co-operatively with the General Engine Company, Buffalo, N. Y., on a royalty basis. Horace G. Campbell is at the head of the enterprise, and associated with him are Joseph Supple and William M. Plympton. A site has been chosen for a factory on East Water and Belmont streets. The company will build the Hoffman rotary engine for steamboats, automobiles and other purposes and will distribute its output in Oregon, Washington and Idaho, and an option is also held on Alaska districts.

H. J. Elson, 402 North Fourth street, St. Louis, Mo., is in the market for new or second-hand cold saw, drill presses and punches for handling structural shapes.

Walter P. Nichols, Front street, Gloucester, Mass., has established a machine shop for the manufacture of gas and gasoline engines. He is not in the market for machinery at this time.

A petition in involuntary bankruptcy has been filed in the courts against the Vulcanus Forging Company of Cleveland by the Jones & Laughlin Steel Company, the Cleveland Gas, Light & Coke Company, and A. M. Moreland. The claims against the company amount to more than $80,000. It recently went through assignment proceedings in the insolvency court and C. O. Gilbert was appointed assignee.

Armour & Co., Chicago, are to build a small local repair shop at Riverside, Cal.

The Pennsylvania Engineering Works, New Castle, Pa., builder of blast furnace and steel plant construction, general machine and plate work, ingot molds and heavy castings, has abandoned its intention of erecting a steel car plant in connection with its present works. The company needed more ground for the proposed plant, but owing to the high prices asked for it by the owners the project has been abandoned.

Such machinery as will be required by the Grand Crossing Tack Company, Grand Crossing, Ill., for replacing that lost in the fire which recently destroyed part of its plant is all special and will either be built by the company itself or secured from local machine shops. The power plant was not destroyed, and nothing will be required in the way of engines, boilers, &c.

The Mannington Forged Tool Company, Mannington, W. Va., which was organized last month with a capital stock of $25,000, has purchased the plant known as the New Eggendinger Tool Company, formerly at Vincennes, Ind., which had an established trade all over the world. The company has about completed a new building, 75 x 140 feet, which it has equipped with new and modern machinery for the manufacture of carving, sculptors', engravers', pattern makers', molders' and wood turners' tools, machine bits, handles, special tools, &c. It is expected that the plant will be in operation about April 1. U. H. Debendarfer is president; Z. W. Jones, vice-president; J. G. Eurl, secretary; C. W. Crozier, treasurer, and B. J. Hauk, manager.

The Anthracite Machine Works, Minersville, Pa., which was established several years ago, has made an assignment for the benefit of its creditors. The directors have closed the plant, and it is understood that the property will be sold.

The S. J. Cresswell Iron Works, Philadelphia, Pa., has placed a contract for the construction of its new one-story machine shop, 26 x 68 feet, and an addition 32 x 64 feet.

Grant's Pass Iron & Steel Works, Grant's Pass, Ore., an enterprise that has been recently started to meet the growing demand for mining machinery and castings in that section of the country, is installing the machinery in its new plant. H. D. Norton is president; Joseph Morse, vice-president; H. A. Rothermund, secretary; R. W. Clarke, treasurer, and B. M. Hall, manager.

The Buffalo, Rochester & Pittsburgh Railroad, which is to build new shops at Du Bois, Pa., does not contemplate the purchase of any new tools for the shops, as it is well equipped in regard to machinery, except possibly a few light tools for the wood working shop.

Otto Meinshausen, president of the defunct American Copper, Brass & Iron Works, has purchased 12½ acres at Ashland avenue and Wellington street, Chicago, on which he purposes the erection of a large plant for the manufacture of machinery, and particularly of equipments for beet and cane sugar factories, breweries and distilleries.

The Thomas Carlin's Sons Company, Allegheny, Pa., manufacturer of shears, grinding pans and contractors' machinery, has entered some large orders for this class of equipment. The company recently shipped two grinding mills for brick plants to

St. Louis, a grinding mill for ore to British Columbia, another grinding mill to Brisbee, Aris., and a fourth grinding mill to Rio Janeiro, Brazil. Billet shears have been shipped to Fort Worth, Buffalo and St. Paul, and hoisting engines and derricks to Columbus and New York.

The State of Pennsylvania has granted a charter to the Reading Machine Company, Reading, Pa., which will manufacture general machinery. The company's capital is $25,000.

The Diamond Drill & Machine Company, Birdsboro, and the Crane Iron Works, Catasauqua, Pa., have posted notices of 10 per cent. increase in wages dating from April 1.

The Harrisburg Pipe & Pipe Bending Company will hold a meeting of its shareholders at Harrisburg, Pa., on May 27 to discuss a proposed increase of capital stock.

The Connersville Blower Company, Connersville, Ind., has recently closed a $30,000 contract which will require a night force to help fill it.

The Western Machinery Company, Kansas City, Mo., has commenced the manufacture of the Maynard cement building block machine.

Power Plant Equipment.

The Best Mfg. Company, Pittsburgh, operating machine shop and steam fitting shops, has secured a contract for the pipe fitting required for improvements being made at the plant of the Eastern Steel Company, Pottstown, Pa. The contract was awarded by the Garrett-Cromwell Engineering Company, Cleveland, Ohio, which is consulting engineer for the Eastern Steel Company.

No month for more than two years has produced a volume of new orders equal to those received by the Westinghouse Electric & Mfg. Company, Pittsburgh, in February. It is stated that the industrial department of the East Pittsburgh works has now on its books orders totaling twice the amount ever on the books at a single time before, while the railway department is busier than at any former time. Among the recent orders of the company is one from the Brooklyn Rapid Transit Company for over 1000 motors of various sizes in the general plan of adding to the capacity of the system. Another order came from the South Side Elevated road of Chicago for the motors and controllers for 70 cars. The company is also enlarging its power equipment. From the Wisconsin Light & Power Company of La Crosse, Wis., has been received an order for two 400-kw. turbo generators with motors, transformers, switchboards, &c.

The Robert Gair Company, Brooklyn, N. Y., will shortly install three new power units with an aggregate capacity of 500 kw., to replace the plant which it now has. These units are to consist of heavy duty horizontal noncondensing Reynolds-Corliss engines, and will be furnished by the Allis-Chalmers Company from its West Allis works, the generators being built by the electrical department at Cincinnati.

Bids are asked until May 14 for the construction of a water works system at Mansfield, La.

Through the instrumentality of the Shreveport Progressive League, Shreveport, La., an agreement has been practically closed for the location of a large boiler works in that city. It is understood that the new project is backed by Northern capitalists and that a site for the new plant has been secured. It is expected that an announcement will be made within the next few weeks of the parties interested and the plan and scope of the enterprise.

The National Engine Company, Rockford, Ill., has secured the Forsberg machine shop on Tenth street, which it will occupy on June 1. It is the intention of the company to build an additional building as soon as possible.

The General Engine Company of Buffalo, N. Y., has filed a certificate of increase of capital stock from $100,000 to $2,000,000. This is the company organized to manufacture the Hoffman rotary engine, in which the cylinder revolves around the piston, as described in the December 29 issue of *The Iron Age*.

One of the largest business transactions ever completed in Erie, Pa., was announced last week, the Erie City Iron Works having purchased the factories and shops of the Stearns Mfg. Company, whose plant is situated across the Philadelphia & Erie Railroad tracks from the Erie City Works. This purchase adds to the present large plant of the Erie City Iron Works some 11 acres of ground and affords greatly increased facilities.

The Montreal Water & Power Company, 107 St. James street, Montreal, Quebec, will receive bids until May 15 on a 15,000,000-gallon high-duty pumping engine and boilers.

Foundries.

The Brown-Corliss Engine Company, Corliss, Wis., is erecting a 90-foot addition to its large foundry building.

Chas. F. Walter and Thomas Hardie have been appointed receivers of the Philadelphia Steel & Iron Company, which has an iron and steel casting plant at Frankford, Pa.

The Central Foundry Company, Vincennes, Ind., will soon put into commission its extra cupola, which has been out of service for the past year. This will materially increase the output of the plant, demand for which has been growing rapidly.

The West Allis Malleable Iron & Chain Belt Company is planning extensive additions to its plant at West Allis, just west of the city limits of Milwaukee. The additions will more than double the capacity of the plant. The present foundry is 70 x 190 feet, while the proposed addition, for which plans have been drawn, will be 70 x 220 feet. An addition to the machine shop, 64 x 70 feet, two stories high, is also arranged for. The company makes a specialty of the manufacture of adjustable chain belting.

C. H. Urick, Erie, Pa., has completed the organization of a new company, capitalized at $25,000, which will erect an up to date foundry on Cherry street, between the railroad tracks and Fifteenth street. Bids are now being received for the construction of the building, the equipment for which has been purchased. Associated with Mr. Urick in the enterprise are his sons, C. H. Urick, Jr., W. H. and E. A. Urick, all of whom have had considerable experience in the foundry business.

The United States Cast Iron Pipe & Foundry Company, New York, is making extensive improvements to its plants at Bessemer and Anniston, Ala.

The Bessemer Foundry & Machine Company, Butler, Pa., is marketing $150,000 worth of first mortgage 5 per cent. gold bonds to increase the capacity of its plant.

The Ball Steel Company, Newcastle, Del., will have its new plant in operation April 15.

The Water Commissioners of Reading, Pa., have awarded contracts aggregating $13,417 in value. The Camden Iron Works received the contract for cast iron pipes and special castings and for the wates gates. The Rensselaer Mfg. Company, Troy, N. Y., got the contract for fire hydrants.

Fires.

The plant of the Youngstown Foundry & Machine Company, Youngstown, Ohio, was recently damaged $20,000 by fire.

The plant of the Lister Agricultural Chemical Company, Newark, N. J., was destroyed by fire March 25. The loss is placed at about $75,000.

The butt weld department of the tube mill of Spang, Chalfant & Co., at Etna, Pittsburgh, was destroyed by fire last week. The mill will be rebuilt, but on another site, to remove it from the floods of the Allegheny River.

Three mills of the Schagticoke Powder Company at Schagticoke, N. Y., were wrecked by an explosion March 28.

No. 9 breaker of the Lehigh & Wilkes-Barre Coal Company, at Sugar Notch, near Wilkes-Barre, Pa., was destroyed by fire March 28. The loss is about $50,000.

Bridges and Buildings.

The Penn Bridge Company, Beaver Falls, Pa., has been awarded a contract for the erection of a bridge at Catawissa, Pa., to cost $124,900.

Wm. S. Hewett & Co., Minneapolis, Minn., have been awarded the contract at $6890 for the building of a steel bridge across the Zumbro River, near Kellogg, Minn.

Frank Wilkinson, trustee in bankruptcy of the Wabash Bridge Company, Wabash, Ind., which failed in August, 1903, has closed his trust. Creditors realized 1¾ cents for every dollar of indebtedness. Liabilities were $325,000, chiefly due to banks.

The Newcastle Bridge Company of Indianapolis has filed with the Circuit Court a petition to have its name changed to the Central States Bridge Company. The company was organized at Newcastle, Ind., in 1896 and moved to Indianapolis in 1901.

Hardware.

The Holt-Lyon Company, Tarrytown, N. Y., has increased its output over 70 per cent., and sales are running more than 50 per cent. ahead of last year, including some good orders from abroad. The company manufactures Holt's improved Dover egg beater and cream whip, Cleaner rug and carpet beater, Lyon egg beater and Holt's self adjusting flue stop.

The Ray Automatic Machine Company, Berea, Ohio, manufacturer of nuts, bolts, rivets, &c., has reincorporated as the Ohio Nut & Bolt Company. The business will be conducted under the same management as heretofore.

Miscellaneous.

The Newport Sand Bank Company, Newport, Ky., is receiving good orders for its molding sand from Denmark, South America, Mexico and Canada. The company controls upward of 400 acres in various parts of this country, comprising large deposits of high grade molding sand. While a number of brands are put on the market from these different deposits, the Newport No. 5 sand is the leader. It appears from the experience of this company that foreign countries are giving considerable preference to American sands, and the business which is coming to it both from abroad and from the largest foundries in this country is an indication of the excellent quality of its products. The business outlook is stated never to have been brighter than at present.

The American Car & Foundry Company has ordered from the Allis-Chalmers Company for its Chicago plant a power unit consisting of one horizontal cross compound Reynolds-Corliss engine with cylinders 14 and 32 inches in diameter and a 36-inch stroke, and one 350-kw. Bullock engine type generator.

The Otis-Fenson Elevator Company, Limited, which is a consolidation, recently effected, of the Canadian Otis Elevator Company, Limited, Hamilton, Ont., and the Fenson Elevator Company, Limited, Toronto, Canada, is adding the following buildings to its Hamilton works: One-story machine shop, 91 x 176 feet; one-story carpenter shop, 45 x 136 feet; one-story concrete pattern vault, 75 x 100 feet. General contract for the work has been let to Donaldson & Paterson, Hamilton.

The Griswold Mfg. Company is successor to M. O. Griswold & Co., Rock Island, Ill., manufacturers of coin operating and vending machines, advertising specialties and metal novelties. The new company is incorporated for $20,000. A new factory will be built which will be ready to move into about June 1. A few new tools will be required, but the greater part of the equipment is already owned by M. O. Griswold & Co.

The La Salle-Niagara Auto Company has been incorporated with a capital stock of $25,000. The directors are Harry Highland and Clinton M. Johnson of Niagara Falls, and John A. Reynolds of La Salle. The company will manufacture motors, engines and machines under patents held by George E. Whiteside, who will be superintendent of the company's plant. Stanley A. Dwight of Wilson will be general manager and C. W. Savage of Pittsburgh, Pa., will have charge of the sales department. The company has leased a four-story brick building in the village of La Salle, a suburb of Niagara Falls, where it will locate its plant.

The Four Wheel Drive Wagon Company, Milwaukee, Wis., is entering into the business of manufacturing gasoline commercial vehicles in all sizes and for all purposes. The special feature which the company employs is the driving of all four wheels under the truck. It is claimed that an experimental 5-ton machine made and tested during the last year and a half has demonstrated that this mode of construction enables the vehicle to travel under road conditions that would be impossible for any two-wheel drive and would have been impossible, in some instances, for any reasonable number of horses on such loads as have been carried. An instance is given of carrying 14 tons gross weight on a four-wheel drive wagon up an incline with the wheels sinking 8 inches into the ground on one side, while the wheels on the other side were on ice over which water was running. The company contemplates making an addition to its present quarters for testing purposes covering an area 120 x 180 feet. The company was recently incorporated with a capital stock of $1,000,000. Its officers are as follows: President, N. P. Hulst; vice-president and manager, H. Theodore Hansen; secretary-treasurer, G. V. D. Titsworth.

The Ward Iron Company, Abingdon, Va., recently organized with a capital stock of $25,000, will begin mining ore in Johnson County within a few days. The company expects to have its plant ready inside of two months, when it will begin shipping iron ore.

The Burns-Hancock Fire Brick & Clay Company has been incorporated at West Montezuma, Ind., with $100,000 capital stock, by Edward H. Burns, Salem P. Hancock and Alonzo B. Hancock.

Trade Publications.

Automatic Machinery.—Potter & Johnston Machine Company, Pawtucket, R. I. Illustrated catalogue. Deals with automatic chucking and turning machines and universal shaping machines. Descriptions are also given of an automatic patent lever chuck. With the shaping machine are shown various attachments, including index centers, vise and circular planing attachment.

Machine Tools.—Stark Tool Company, Waltham, Mass. Catalogue. Describes and shows the various lines of tools manufactured by this firm, including machinists' bench lathes, tool grinders, rotary pivot polisher, automatic staff lathes for turning staffs and pinions for clocks and watches, universal milling machine, pinion and wheel cutter combined, plain milling machines, &c. Two special features that are described are the Stark antifriction ball bearing end thrust and internal grinding attachment. Another line of machines shown includes lap grinders and tapping machines, two spindle drills and a flat steel grinder. Small tools such as milling cutters and reamers are also manufactured by the company.

Steel, Iron and Building Materials.—Milliken Bros., New York City. Leather bound illustrated catalogue, 7 x 11 inches; 448 pages. Contains useful information and tables relative to steel, iron and other products for buildings and bridges, arranged for the use of engineers, architects and builders. This catalogue is particularly gotten up for foreign countries to give them an idea of what may be furnished in the lines in which this company engages and is issued in Spanish, German and French, as well as English. Both English and metric standards of weights and measures are quoted in the tables of structural shapes, and complete tables of the equivalents of the two systems are printed. In the tables of shapes are included bars and beams of all standard sections, segments for built up columns, &c. These tables are followed by others giving the strength of steel and iron work, and these in turn are followed by text and tables of assistance in the design of steel and iron structures. Perspective drawings and descriptive text are freely used in the explanation of structural steel work as used in fire proof office buildings, stores, warehouses, factories, &c. Much of the book consists of full page half-tone views of special work erected by Milliken Bros. in all parts of the world. Tanks, cranes, derricks, towers, docks and bridges are considered in the next section, followed by ornamental cast iron work in a great variety of forms and classifications.

Generators and Motors.—Akron Electrical Mfg. Company, Akron, Ohio. Bulletin 87. Describes the Akron generators and motors, open, inclosed and semi-inclosed, and of the invertible type. The construction of the parts in detail is shown in the engravings and described in the text. A feature is a motor designed for running with its shaft vertical.

Rock and Ore Breakers.—Allis-Chalmers Company, Milwaukee, Wis. Publication No. 117. Concerns the Gates rock and ore breakers, styles D and F, auxiliary machinery and portable rock breaking plants. The gyratory ore breakers are described in considerable detail, with exterior and sectional views to show the construction. Accessories are described at the back of the catalogue. A view is given of a portable contained plant for preparing railroad ballast.

Blue Print Tables.—E. E. Meyer, Allegheny, Pa. Circular advertising the following list of blue prints of tables compiled from the latest standards: Forces on inclined planes, United States standard bolts and nuts, table of standard gear proportions, United States standard steam, gas and water pipe; Pencoyd rivet proportions, and standard wire gauges. These are prepared especially for the use of draftsmen, machinists, pipe fitters and engineers and are sold singly or in quantity.

Industrial Railways, Elevators and Conveyors.—C. W. Hunt Company, West New Brighton, S. I., N. Y. Two pamphlets. No. 051 concerns the advantages of industrial railways for the handling of raw and finished materials in various lines of manufacture. Details are shown of parts of such equipments—tracks, switches, crossovers, cars of all kinds, electric locomotives, scales, &c. Various small engravings show special cars and noteworthy installations of industrial railways. No. 052 covers briefly the general line of machinery manufactured by this company. The matter is mostly in the shape of small illustrations and brief descriptions of steeple towers, boom towers, steam shovels, elevators, conveyors and their parts, overhead trolleys, cable, automatic and industrial railways, hoisting engines, &c.

Elevating, Conveying and Power Transmitting Machinery.—H. W. Caldwell & Son Company, Western avenue, Seventeenth and Eighteenth streets, Chicago, Ill. General illustrated catalogue No. 28. Size 6 x 9 inches, pages 736. Extremely comprehensive catalogue dealing particularly with Helicoid conveyors, double disk friction clutches, Caldwell-Walker machine molded gears, and in general with elevating, conveying and power transmitting machinery. Illustrations are freely used and enough in the way of descriptive matter attends each to give a fair idea of the articles mentioned. The principal matter in this new catalogue, not found in previous issues, is the result of the purchase by this company of the gear and transmission business formerly owned by the Walker Mfg. Company, Cleveland, Ohio. The catalogue describes very fully the process of machine molding for the making of cast gears and the facilities for gear cutting. The line of power transmission appliances thus acquired, added to the company's former line, makes a very complete one. A new product brought out since the last catalogue is the Caldwell double disk friction clutch, the novel construction and operation of which are discussed in detail.

Steam Pumps.—A. S. Cameron Steam Pump Works, East Twenty-third street, New York City. Illustrated catalogue No. 31; size 6 x 9 inches; pages, 140. Gives a general description of the types and sizes of Cameron pumps and their design and construction, covering the subject in a very comprehensive manner. Alternate pages contain large half-tone illustrations. A particularly interesting part of the book deals in detail with parts of the mechanism of the pump, such as the valve chest, steam end, &c. The pumps are made in standard patterns for boiler feeding, automatic returning of condensation, pumping, fuel oil, fire service, &c. A variety of special pumps is also illustrated, including compound pumps, twin pumps, plunger sinking and deep well pumps, and others of vertical type, and hydraulic pressure, air vacuum, compressed air and circulating pumps. The latter part of the book contains useful information in connection with pump work.

Steam Pumps.—Snider-Hughes Company, Cleveland, Ohio. Illustrated catalogue; size, 4½ x 7 inches; pages, 24. Contains a complete description of a new line of duplex steam pumps known as the Monitor Duplex. Half-tone illustrations show the pump assembled and its parts removed. The novel valve mechanism which characterizes the pump is explained minutely. An illustrated description of this pump appeared in *The Iron Age* of March 16.

A Conveying Equipment.—Jeffrey Mfg. Company, Columbus, Ohio. Bulletin A. Contains a very interesting description of a novel coal and ashes distributing plant.

Automobiles.—J. Stevens Arms & Tool Company, Chicopee Falls, Mass. Pamphlet and circular. Concern the Stevens-Duryea gasoline automobiles.

Shaft Hangers.—Standard Pressed Steel Company, Twentieth and Clearfield streets, Philadelphia, Pa. Hanger poster, 15 x 24 inches. Carries a large illustration of the American Pioneer pressed steel shaft hanger.

"The Doings of Expanded Metal" is the title of a periodical issued by the Associated Expanded Metal Companies, New York City. Half-tone engravings of important structures in which expanded metal figures largely are profusely used.

The Iron and Metal Trades

The continued heavy buying of material of all kinds by the railroad interests is still the main feature of the Iron markets. It is reflected in quite a steady flow of small additional Rail orders, in a very heavy demand for Plates and in the buying of considerable quantities of Structural Material.

The position of the Plate market is attracting particular attention. Eastern mills are selling considerable quantities in the Western markets, notably Cleveland and Pittsburgh, and in some instances are securing premiums. It is understood that the leading interest is fully booked for a long time ahead and is on the verge of being a purchaser to cover contracts. It begins to look as though some foreign material may have to be brought in this year.

There has been another burst of buying of Basic Pig Iron in the Eastern markets. In the Philadelphia district three Steel works have in the aggregate bought 36,000 tons at prices varying from $16.60 to $16.75, delivered, for the third and fourth quarter.

A mill in the New York district has taken 8500 tons.

The Pittsburgh market for Pig Iron for Steel manufacture is pretty bare, it having been impossible to squeeze out 10,000 to 15,000 tons of Bessemer Pig for the Cleveland district for immediate delivery.

The Steel Corporation, it is estimated, will need about 40,000 tons for April delivery, which has not yet been contracted for.

While, therefore, the demand from the Steel works in the East and in the Central West continues extremely heavy and while the Cast Iron Pipe shops are consuming large quantities of Pig Iron the general jobbing foundry trade is still quite slack. Should the general improvement extend to this branch then we must face an acute scarcity and a possible runaway market.

This brings into prominence the question of a supply of foreign Pig Iron. Thus far some moderate lots have been taken for re-export purposes, but the prices at which the sales were effected are pretty close to domestic figures. At tidewater points the price of foreign Pig, duty paid, is from 75c. to $1 per ton above our own markets. New England points are even now closer to parity, but founders are loath to change their mixtures.

A tidewater Steel plant has purchased one lot of 6000 tons of foreign Bessemer Pig at about $18.50, Baltimore, and may have taken additional quantities. This, however, is to partially cover sales of Steel Rails made to South America, taking advantage of the drawback.

An interesting situation is developing in Bridge material. A good deal of business has been placed. Thus the leading interest has booked during the week about 20,000 tons in individually small lots. While the bookings are very heavy, the drawings and specifications are still coming in slowly. There is danger, therefore, of a rush later on, which the fabrication end, with ample reserve capacity, will easily take care of, but which may prove embarrassing to the Structural and Plate mills, which are even now threatened with congestion.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Mar.29, 1905.	Mar.22, 1905.	Mar.1, 1905.	Mar.30, 1904.
PIG IRON:				
Foundry Pig No. 2, Standard, Philadelphia	**$17.75**	$17.50	$17.50	$15.00
Foundry Pig No. 2, Southern, Cincinnati	16.25	16.25	16.25	12.50
Foundry Pig No. 2, Local, Chicago	*17.25*	17.50	17.50	14.00
Bessemer Pig, Pittsburgh	16.35	16.35	16.35	14.35
Gray Forge, Pittsburgh	16.00	16.00	16.00	13.25
Lake Superior Charcoal, Chicago	18.50	18.50	18.50	15.25
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	24.00	24.00	24.00	23.00
Steel Forging Billets, Pittsburgh	**27.00**	26.00	26.00	....
Steel Billets, Philadelphia	28.00	28.00	28.00	25.00
Steel Billets, Chicago	28.00	28.00	28.00	24.00
Wire Rods, Pittsburgh	**34.00**	34.00	31.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	**15.00**	14.25	14.00	11.50
O. Steel Rails, Philadelphia	18.00	18.00	18.00	15.00
O. Iron Rails, Chicago	**20.00**	19.00	19.50	16.50
O. Iron Rails, Philadelphia	**25.00**	24.50	23.00	18.50
O. Car Wheels, Chicago	**16.00**	15.50	15.75	14.50
O. Car Wheels, Philadelphia	**17.00**	17.00	16.00	13.50
Heavy Steel Scrap, Pittsburgh	**16.00**	16.00	15.50	14.00
Heavy Steel Scrap, Chicago	**14.75**	14.50	14.00	11.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	1.73½	1.75	1.73½	1.48½
Common Iron Bars, Chicago	1.62½	1.60	1.60	1.50
Common Iron Bars, Pittsburgh	1.65	1.65	1.65	1.40
Steel Bars, Tidewater	1.64½	1.64½	1.64½	1.49½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.35
Tank Plates, Tidewater	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74½	1.74½	1.74½	1.74½
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74½	1.74½	1.74½	1.74½
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Steel, Pittsburgh	**1.65**	1.65	1.60	...
Skelp, Sheared Steel, Pittsburgh	**1.70**	1.70	1.65	...
Sheets, No. 27, Pittsburgh	**2.30**	2.30	2.20	2.15
Barb Wire, Pittsburgh	2.25	2.25	2.25	2.50
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.90
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.75
METALS:				
Copper, New York	15.25	15.25	15.25	12.75
Spelter, St. Louis	*5.75*	5.87½	6.10	4.95
Lead, New York	**4.50**	4.50	4.40	4.50
Lead, St. Louis	**4.50**	4.40	4.35	4.42½
Tin, New York	**29.87½**	29.70	28.60	28.35
Antimony, Hallet, New York	7.87½	7.87½	7.87½	7.25
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.74	3.74	3.74	3.64

Chicago.

FISHER BUILDING, March 29, 1905.—(*By Telegraph.*)

Markets have settled down into a steady pace after the great events recorded in the last week's report. Business ranges from fair to good in almost every line, and while the consumption of Iron and Steel products in this territory does not seem to be in proportion to the record breaking pace at which furnaces and mills are now running, a good increase is shown on every side and the tone of the market is strong and hopeful. In Pig Iron the only noticeable change is a growing tendency on the part of producers of Northern Iron to make concessions in order to meet the wishes of the consumer who can use Southern or Northern Iron with equal success. In other words, there is more disposition on the part of Northern producers to meet or nearly meet the Southern price than was in evidence several weeks ago. This tendency is not new this week, but it has reached the point where it cannot be ignored. As predicted last week, the Steel situation is, if anything, more unfavorable to the consumer than ever before. The large purchases in the Pittsburgh district have further reduced the available supply of Billets for the every day consumer. It is becoming increasingly difficult to get Structural Material on anything like reasonable time, and premiums are already talked about, though no evidence is at hand in this market of actual premiums paid thus far. In Plates, if it were not for the fact that Eastern mills were willing to take business in this market at pool prices and make prompt deliveries, consumers would be in a bad way, because Pittsburgh and Western mills are overloaded already. Demand for Sheets is increasing daily. The Inland Steel Company has started its Sheet mills at Indiana Harbor, which have been idle

since last July, with fat order books at good prices. As announced in another column of this issue, the old Emlyn Iron Works will reopen in a few weeks under the name of the Interstate Iron & Steel Company and will play an important part locally in both Iron and Steel Bars, following a little later with Small Soft Steel Channels and other shapes. Bar prices are firm and demand is good. Nothing new has developed in the Merchant Steel line, but specifications are satisfactory. Neither Pipe nor Boiler Tubes have been advanced in price, but the tone of both is strong and there is a scarcity of some sizes of Boiler Tubes. Cast Iron Pipe makers are very large buyers of Pig Iron this spring and are doing a splendid business. Old Materials are stronger in tone, with a good general demand, though the large consumers in this market have not yet become important factors in the purchase of these goods. Wire prices are strong and demand is excellent. There is no change in the nonferrous metals, but business is understood to be a little better.

Pig Iron.—While there are no records of large sales made during the week under review, still a multitude of small orders keeps the Iron agencies reasonably busy. While we hear of $13.75, $14 and even $14.25, Birmingham, on Southern Iron, the price in Chicago is still $13.50, Birmingham, or $17.15, Chicago, for No. 2, and Northern producers are apparently holding the market down to that figure by making concessions from their published $17.50 basis to melters who can use either Southern or Northern, quoting prices sufficiently near to those of the Southern furnaces to maintain control of the situation. Price concessions of this kind have been made for some weeks, but only recently have they been made openly enough to warrant a modification of our quotations. The easing up of the Coke situation is also a feature that encourages buyers of both Coke and Iron. Most of the business being booked now in Pig Iron is for the third quarter, although there is still a good deal of business being done for May and June delivery. A good many furnaces, however, are sold up to such a point that they cannot take on further commitments this side of July. We quote:

Lake Superior Charcoal	$18.50 to $19.00
Northern Coke Foundry, No. 1	17.75 to 18.00
Northern Coke Foundry, No. 2	17.25 to 17.50
Northern Coke Foundry, No. 3	16.75 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Ohio Strong Softeners, No. 1	18.80 to 19.30
Ohio Strong Softeners, No. 2	18.30 to 18.80
Southern Silvery, 4 to 6 per cent. Silicon	18.65 to 19.65
Southern Coke, No. 1	17.65 to 17.90
Southern Coke, No. 2	17.15 to 17.40
Southern Coke, No. 3	16.65 to 16.90
Southern Coke, No. 4	16.40 to 16.65
Southern Coke, No. 1 Soft	17.65 to 17.90
Southern Coke, No. 2 Soft	17.15 to 17.40
Southern Gray Forge	16.50 to 16.75
Southern Mottled and White	15.90 to 16.15
Malleable Bessemer	17.50
Standard Bessemer	18.00 to 18.50
Jackson Co. and Ky. Silvery, 6 % Silicon	21.30
Jackson Co. and Ky. Silvery, 7 % Silicon	21.80
Jackson Co. and Ky. Silvery, 8 % Silicon	22.30
Jackson Co. and Ky. Silvery, 10 % Silicon	23.30
Alabama Basic	17.65
Virginia Basic	17.65

Rails and Track Supplies.—Eastern mills are beginning to pick up orders in the Chicago market now that the Illinois Steel Company's mill is full of business on Standard Section Rails, but the orders thus far received are for relatively small quantities. Demand continues to improve for Light Section Rails and higher prices are looked for shortly. We quote: Standard Section Rails, $28 per gross ton at maker's mill in 500-ton lots or greater, plus full freight to destination; Light Section Rails, $24 to $27 per gross ton, according to weight and tonnage; Angle Bars, 1.40c. to 1.50c.; Spikes, 1.70c. to 1.75c.; Track Bolts, 2.40c. to 2.50c., base, with Square Nuts, and 10c. to 15c. higher for Hexagon Nuts. Store prices on Track Supplies range from 15c. to 25c. per 100 lbs. above car lot mill prices.

Structural Materials.—Steel work for the power house of Sears, Roebuck & Co.'s new plant, aggregating 1400 tons, was placed with the North Works of the Illinois Steel Company. The administration building, which calls for 1300 tons, went to the American Bridge Company. The printing house, which uses about equal quantities of Cast Iron and Structural Steel, went to Hansell-Elcock Company and Bolters Sons. The merchandise building, a very large mill construction edifice, was divided among five local shops, the Illinois Steel Company getting the bulk of the Structural Steel work. A new hotel is to be built on Madison street which will call for about 1000 tons of Structural Steel. The situation in Structural Steel is growing more involved daily and it is becoming increasingly difficult to get Steel either from mills or fabricants. Premiums are already being paid and business has reached the point where not price but delivery is the important element in any large transaction involving Structural Steel Shapes. Prices are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.76½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.76½c.; Angles, larger than 6 inches on one or both legs, 1.86½c.; Beams, larger than 15 inches, 1.86½c.; Zees, 3 inches and over, 1.76½c.; Tees, 3 inches and over, 1.81½c., in addition to the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices for either random lengths or cut to lengths on Angles, Beams and Channels, base sizes, range from 2c. to 2.10c., with the usual extras for size.

Plates.—Fortunately for Chicago and the West, large Plate mills at Johnstown and Coatesville, Pa., are still able to make prompt deliveries on orders placed with them for shipment into this territory and are disposed to take advantage of the fact that Western mills are so full of business as to prevent them from giving anything like prompt shipments. Prices are unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 14 and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Sheared and Universal Mill Plates, tank quality, 6¼ to 14 inches, inclusive, 10c. below these prices; Flange quality in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange quality, 25c. extra.

Sheets.—The Sheet mills of the Inland Steel Company at Indiana Harbor started into operation last Monday, March 27, on the open shop basis. It will be remembered that the Sheet mills of this company were closed down last July after a series of strikes by union workmen. The company claimed that at the wages then demanded by the union it was impossible to make Sheets and sell them at prevailing market quotations at a profit, and therefore closed its mill indefinitely. It is now starting up as above stated on the open shop basis, and has its order books full of business, guaranteeing a continuous run unless obstructed by further labor troubles. The Sheet market is strong, with most mills falling each week a little further behind their orders, both because of the difficulty in getting Sheet Bars and because of the volume of tonnage on hand. The minimum car lot quotations, Chicago, for shipment from mill on base widths and lengths are as follows: Blue Annealed Sheets, Nos. 9 and 10, 1.91½c.; Nos. 11 and 12, 1.96½c.; Nos. 13 and 14, 2.01½c.; Nos. 15 and 16, 2.11½c.; One Pass Cold Rolled Box Annealed Sheets, Nos. 15 and 16, 2.26½c.; Nos. 18 and 20, 2.31½c.; Nos. 22 and 24, 2.36½c.; Nos. 25 and 26, 2.41½c.; No. 27, 2.46½c.; No. 28, 2.56½c.; No. 29, 2.71½c.; No. 30, 2.81½c. Store prices are advanced in the same ratio, as follows: Blue Annealed, No. 10, 2.10c. to 2.20c.; No. 12, 2.15c. to 2.20c.; No. 14, 2.20c. to 2.25c.; No. 16, 2.30c. to 2.40c.; One Pass Cold Rolled Box Annealed, No. 16, 2.35c. to 2.45c.; Nos. 18 and 20, 2.55c. to 2.60c.; Nos. 22 and 24, 2.55c. to 2.65c.; No. 26, 2.60c. to 2.70c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c to 290c. Galvanized Sheets for shipment from mill are quoted at the following prices, for base sizes, f.o.b. Chicago, car lots, the range indicating the different ideas of different producers: No. 10, 2.51½c. to 2.61½c.; Nos. 12 and 14, 2.61½c. to 2.71½c.; No. 16, 2.71½c. to 2.81½c.; Nos. 18 and 20, 2.86½c. to 2.96½c.; Nos. 22 and 24, 3.01½c. to 3.11½c.; No. 26, 3.21½c. to 3.31½c.; No. 27, 3.41½c. to 3.51½c.; No. 28, 3.61½c. to 3.71½c.; No. 29, 3.91½c. to 4.01½c.; No. 30, 4.11½c. to 4.21½c. These prices range from 75, 10 and 2½ to 75, 10 and 5 discount on No. 16 to 75, 10, 5 and 2½ and 75, 10 and 10 on the lighter gauges. Store prices on Galvanized Sheets are unchanged for the present, as follows: Nos. 10, 12 and 14, 3.10c. to 3.20c.; No. 16, 3c. to 3.10c.; Nos. 18 and 20, 3.10c. to 3.20c.; Nos. 22 and 24, 3.25c. to 3.35c.; No. 26, 3.50c. to 3.60c.; No. 27, 3.70c. to 3.80c.; No. 28, 3.95c. to 4.05c.; No. 29, 4.40c. to 4.50c.; No. 30, 4.85c. to 4.95c. Extras for width vary with the gauges.

Bars.—As announced in another column, the Emlyn Iron Works Bar mill at East Chicago has been taken over by the company known as the Interstate Iron & Steel Company and will be started up about May 1, after which time it will be an important factor locally in both Steel and Iron Bars as well as Shapes.

Steel Bars—Are unchanged at 1.66½c., base, half extras, in car lots from mill. Iron Bars and Bands are firm at 1.62½c. to 1.65c. Current business on Soft Steel Bars and Hoops is naturally light, because most of these materials are bought on long time contract, but specifications on such contracts are highly satisfactory. Soft Steel Angles and other Shapes in the Bar class are firm at 1.76½c., half extras, in car lots. Hard Steel Bars, Angles and Shapes rolled from Old Rails are quoted at about $2 a ton below the same goods in Soft Steel. Hoops are firm at their new price of 1.81½c., base, full extras, Chicago. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.20c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—Specifications are good and already

a number of important factors are feeling the market for contracts for 1905-6. Prices are unchanged as follows: Smooth Finished Machinery Steel, 1.91½c.; Smooth Finished Tire, 1.86½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.23½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount in car lots and 45 per cent. in less than car lots in base territory.

Merchant Pipe.—Business is reported to be good and prices are unchanged, as follows:

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
⅛ and ¼ inch	65.85	49.85	63.85	47.85
⅜ and ½ inch	69.85	57.85	67.85	55.85
¾ to 6 inches	73.85	63.85	72.85	62.35
7 to 12 inches	68.35	53.85	67.35	57.85
Extra strong pipe, ⅛ to ⅜ inch	58.85	46.85	56.85	44.85
½ to 4 inches	65.85	53.85	63.85	57.85
4½ to 8 inches	61.85	49.85	59.85	47.85
Double extra strong, pipe, ½ to 8 inches	54.85	43.85	52.85	41.85

Boiler Tubes.—Floods in the Pittsburgh district affected important Tube mills to such an extent that great difficulty is experienced now in getting anything like satisfactory mill deliveries on Boiler Tubes. Prices are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	44.35	41.35	54.35
1¾ to 2¼ inches	56.35	41.35	42.35
2½ inches	58.35	46.35	45.35
2¾ to 5 inches	64.35	53.35	up to 4 in. 52.85
6 to 13 inches	56.35	41.35	....

Discounts on less than car lots from mill are two points lower. Store prices are unchanged on Iron and Steel Lap Weld Tubes, but are advanced sharply on Boiler Tube sizes in Seamless Steel, the advances ranging from 5 to 7½ per cent., at the following discounts, f.o.b. warehouse:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	30
2½ inches	52½	35	37½
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Cast Iron Pipe.—No large deals have been closed during the week under review, but many are being figured on, including large tonnages for New Orleans and Chicago. The tonnages of Pig Iron being bought by the Pipe works would indicate that their business is excellent. Prices at Chicago are as follows: $29 a gross ton for 4-inch Pipe and $28 for 6-inch and larger, with $1 a ton higher for Gas Pipe.

Old Material.—A stronger feeling pervades the market and a number of prices have been advanced in the face of the fact that the largest consumers of Old Materials are still withholding from the market. What will happen when they come in is easy to surmise. Both the C., B. & Q. and the C., M. & St. P. roads had large lists out late last week, and these have developed rather higher prices than had prevailed previously. The following list gives the range of quotations which represent the market condition both from the standpoint of the large seller and the large buyer, the prices representing the figures at which car lots or greater can be bought from railroads and from dealers:

Old Iron Rails	$20.00 to $20.50
Old Steel Rails, 4 feet and over	15.50 to 15.75
Old Steel Rails, less than 4 feet	15.00 to 15.25
Heavy Relaying Rails, subject to inspection	22.50 to 23.00
Heavy Relaying Rails, for side tracks	20.00 to 20.50
Old Car Wheels	16.00 to 16.50
Heavy Melting Steel Scrap	14.75 to 15.00
Frogs, Switches and Guards	14.50 to 15.00
Mixed Steel	12.50 to 13.00

The following quotations are per net ton:

Iron Fish Plates	$17.50 to $18.00
Iron Car Axles	21.00 to 21.50
Steel Car Axles	16.50 to 17.00
No. 1 Railroad Wrought	16.50 to 17.00
No. 2 Railroad Wrought	15.50 to 16.00
Shafting	16.50 to 17.00
No. 1 Dealers' Forge	12.50 to 13.00
Wrought Pipes and Flues	11.75 to 12.00
No. 1 Cut Busheling	11.25 to 11.50
Iron Axle Turnings	11.50 to 12.00
Soft Steel Axle Turnings	11.50 to 12.00
Machine Shop Turnings	11.00 to 11.50
Cast Borings	8.50 to 8.75
Mixed Borings, &c	8.50 to 8.75
No. 1 Mill	9.75 to 10.00
Country Sheet	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings	11.50 to 12.00
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	11.00 to 11.50
Railroad Malleable	13.50 to 13.75
Agricultural Malleable	12.25 to 12.50

Metals.—There has not been sufficient trading here to make a local market and no advices have been received of any important price changes in this line of trade, though there is a feeling that prices are likely to be maintained on the present basis or even go higher. Copper is held at 15⅛c. to 15¼c. for Casting, and 15⅝c. to 15⅝c. for Lake, in car lots, with ¼c. to ½c. higher for small lots. Lead is quoted in 50-ton lots at 4.45c., in car lots at 4.50c. and 5c. to 5¼c. in small lots; Pig Tin at 30¼c. to 30½c. in car lots and 31c. to 31½c. in less than car lots. Spelter is in slow demand, the car lot price being 6¼c. and the small lot price 6½c. Sheet Zinc is held at $7.50, base, La Salle, equivalent, after deducting discounts, to $7.25, Chicago, for car lots of 600-lb. casks, with small lots selling at $7.50 to $8. Prices of Old Metals are as follows: Copper Wire, 13½c.; Heavy, 13c.; Copper Bottoms, 12c.; Copper Clips, 12¾c.; Red Brass, 12c.; Red Brass Borings, 10⅜c.; Yellow Brass, Heavy, 9c.; Yellow Brass Borings, 7⅞c.; Light Brass, 7¼c.; Lead Pipe, 4¼c.; Tea Lead, 3.85c.; Zinc, 4.35c.; Pewter, No. 1, 19¼c.; Block Tin Pipe, 25c.

Coke.—The tone of the market is easier and there is little difficulty in securing an ample supply of Coke for present use. It may be said that the average selling price on Connellsville Foundry Coke is $3 at the ovens or $5.65, Chicago. Cokes from other valleys not so highly favored are selling at 25c. less, but Furnace Coke is stated to be strong at $2.50 at the ovens. There is no change in the Wise County, W. Va., situation, except that there is less disposition on the part of these Coke producers to give away their freight advantage. Several hundred cars of Coke dumped on the Chicago market last week on speculation were finally sold at low prices to avoid demurrage. This disturbed the market temporarily and eased the situation locally.

D. R. & F. A. Cohen have entered into the wholesale Scrap Iron and Steel business, with temporary quarters at room 706 Great Northern Building, Chicago.

Philadelphia.

FORREST BUILDING, March 28, 1905.

The Iron market has been very active during the past week and has developed increased strength. Sales of Basic Iron aggregating about 30,000 tons were made during the latter part of the week, mostly for delivery during the third quarter, although some deliveries will probably extend into the last quarter of the year. Foundry Irons, while they have not been taken in as large blocks, have sold quite freely, and the aggregate tonnage has been large. There have also been some importations of both Foundry and Bessemer Irons, but not a very heavy tonnage, on which the drawback will be operative owing to the exportation of the finished materials. Notwithstanding these heavy sales there is no quotable change in prices of Pig Iron, indicating that both buyers and sellers have the market well in hand. There is a strong tendency on the part of sellers to hold the market, if possible, close around present figures, which are generally satisfactory to the purchaser. Producers of Pig Iron have in some cases sold up their output for the first half of the year, and are showing no hesitancy in entering orders for the last half of the year at prices quoted. There has been a decided improvement in the demand for Plates and Structural Material, car and locomotive builders as well as shipyards taking increased tonnage, and mills are being operated at greatly increased capacity.

Pig Iron.—The market continues strong, particularly so in view of the extraordinary demand during the past week. Prices are practically unchanged and it does not seem to be the intention of sellers to advance prices unless absolutely driven to it by a continuation of the present heavy demand. Basic Iron has commanded the greatest attention during the past week, 30,000 tons being sold for delivery, mostly during the last quarter, at an average price of about $16.75, delivered. Foundry Irons have been taken largely in 100 to 500 ton lots, with an occasional lot of 1000 tons at ruling figures. There is a strong tendency on the part of foundrymen to place their orders for their profitable requirements during the balance of the year, which sellers are accepting at to-day's quotations, and for large quantities the price would be about $17.50 to $17.75 for No. 2 X, with a slight advance for small lots. There has been some good demand for Pipe Iron, one lot of 6000 tons being sold at $16, furnace, while some considerable business is still in the market for this grade of Iron, for delivery during the last half of the year. The range of prices for deliveries in buyers' yards would be about as follows, varying according to proximity:

No. 1 X Foundry	$18.25 to $18.50
No. 2 X Foundry	17.75 to 18.00
No. 2 Plain	17.25 to 17.50
Standard Gray Forge	16.00 to 16.50
Ordinary Gray Forge	15.50 to 15.75
Basic	16.75 to 17.00
Low Phosphorus	20.25 to 20.50

Ferromanganese.—Sales have been made at materially higher figures than those last quoted. The market continues strong and there has been no difficulty in obtaining $47.50 to $48.50, delivered to nearby mills.

Muck Bars.—There is a somewhat stronger demand and makers are asking about $28.75 to $29.50, f.o.b. seller's mill.

Steel.—There is a very active demand. Mills are pretty well filled on orders and find no trouble in obtaining $28 to $29 and in some cases even $30 for small spot lots.

Plates.—The demand has materially increased. Contracts for good tonnages are being made and specifications on existing orders are coming out freely. There is a large tonnage being taken by the locomotive builders, shipyards and steel car builders and mills are being pushed to make deliveries promptly. Prices are firmly maintained, and in the event of continued heavy demand it is not unlikely that premiums on the present basis will have to be paid before long for prompt deliveries. Prices are about as follows:

	Carload. Cents.	Part. carload. Cents.
Tank, Bridge and Boat Steel, over 14 inches wide	1.73½	1.78½
Tank, Bridge and Boat Steel, rectangular Plates, 14 inches wide and under	1.63½	1.68½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Still Bottom Steel	2.03½	2.08½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Per 100
3-16-inch thick	$0.10 pounds extra.
Nos. 7 and 8, B. W. G.	.15 "
No. 9, B. W. G.	.25 "
Plates over 100 to 110 inches	.05 "
Plates over 100 to 115 inches	.10 "
Plates over 115 to 120 inches	.15 "
Plates over 120 to 125 inches	.25 "
Plates over 125 to 130 inches	.50 "
Plates over 130 inches	1.00 "

Structural Material.—The general demand is good. The various industrial plants, car builders, bridge and other important interests are taking a heavy tonnage, which has every indication of increasing as the season for outdoor work advances. Prices continue about as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specifications, and small Angles, 1.65c. to 1.68c.

Bars.—As a rule prices are being strictly maintained and in some cases premiums are paid for prompt deliveries. Prices and tonnage continue satisfactory. Best Bar Iron commands from 1.73½c. to 1.80c., delivered. Steel Bars are 1.63½c. to 1.70c., but prompt deliveries cannot be had except at outside figures.

Sheets.—There is a good demand and while mills are operating to their full capacity, it is difficult for them to make satisfactory deliveries. Prices are strong, ordinary Sheets being quoted as follows: 18 to 20 gauge, 2.40c.; 22 to 24 gauge, 2.50c.; 25 and 26 gauge, 2.60c.; 27 gauge, 2.70c., and 28 gauge, 2.80c. Best grades are two to three tenths higher.

Old Material.—While there have been no sales of any large quantity of Old Material during the past week, the market remains firm. Holders are maintaining a strong front and prospects seem to favor slightly higher prices, bids and offers being about as follows for deliveries in buyers' yards, the sales being largely at the medium or higher figures:

Old Steel Rails	$18.00 to $18.50
No. 1 Steel Scrap	17.75 to 18.00
Old Steel Axles	22.50 to 23.50
Old Iron Axles	26.50 to 28.00
Old Iron Rails	25.00 to 26.00
Old Car Wheels	17.00 to 17.50
Choice Scrap, R. R. No. 1 Wrought	23.00 to 23.50
No. 1 Yard Scrap	20.50 to 21.00
Machinery Scrap	16.00 to 16.50
Low Phosphorus Scrap	21.50 to 23.00
Wrought Iron Pipe	16.50 to 17.00
No. 1 Forge Fire Scrap	16.50 to 17.00
No. 2 Forge Fire Scrap, Ordinary	13.00 to 13.50
Wrought Turnings	15.25 to 15.75
Axle Turnings, Choice Heavy	16.50 to 17.00
Cast Borings	11.50 to 11.75
Stove Plates	13.50 to 14.00

Birmingham.

BIRMINGHAM, ALA., March 27, 1905.

To those who are imbued with optimistic views of the condition of the Iron market the outlook for a further advance in prices is very satisfactory. The general opinion is on that side of the market. Those concurring in this view quote on the basis of $14 for No. 2 Foundry and an occasional lapse to $13.75. There rises up, though, an occasional seller who asserts that he has failed to realize the maximum quotations and to keep things moving had to accept $13.50. But it is safe to say that sales at the inside were much less than at the other prices given. The only explanation of the condition existing is founded upon impatience, for the sales reported at the inside figures were of small magnitude and had no influence in shaping values.

As stated in previous letters, every seller fixes values according to his own notions and feels no concern in what his neighbor is doing. There were sales of iron on the basis of $14 for both No. 2 Foundry and No. 2 Soft. Some of it was for delivery in the third quarter and some of it was covered in delivery by the second half of the year. There was some sold also at the same value for delivery in the second quarter. A premium is usually asked over current values for the long deferred deliveries, but it is not always obtained. A material part of such sales has been on the basis of current values, making, in some cases, the one price for any delivery during the whole year.

A moderate amount of No. 1 Foundry sold at $14.50 for the second quarter, and some sellers will not quote No. 3 Foundry under $13.50. At this price they will make it a point to be agreeable on deliveries. There were some sales of No. 3 Foundry at $13.25 when conditions were approved by the seller. Some analysis Iron again brought as high as $14.25 for what could not be graded above No. 2 Foundry, and 200 tons of Mottled Iron changed hands at $12.75, which price is also quoted for Gray Forge. These quotations show rather a varying market, but the average value obtained is about the same for all. One seller in some cases, for certain grades, tops his neighbor by a 25-cent advantage on transactions, which the neighbor recoups in due time when the turn comes to him.

None of the individual orders were of any moment. The business was confined to medium and small sized lots. It was a week of fair business, with prices about the same as those of the preceding week. One feature of the market is still of interest, and that is that buyers are willing, and in not infrequent cases, are anxious to have their purchases shipped to them before the maturity of delivery. As far as it can be done such buyers are being accommodated. In the way of warrant business nothing is reported this week. The bulk of the business concluded during the week was for foundry account, which has been conspicuous until of late by its absence from the market. But the foundries are in now to a very appreciable extent. It is well to state that two large and influential producing interests are positively out of the market at anything less than a $14 basis for No. 2 Foundry. It is anticipated by the majority of the trade that there will be a renewal of activity in the market before the middle of April. It can still be stated that the fuel problem has not yet had a profitable solution and it is causing a world of worry to some of our interests.

The Pipe works report a fine business, and it is noted that the United States Pipe works at Bessemer is making frequent and large shipments to the isthmus of Panama. The Dimmick Pipe Works the past week filed a declaration increasing its capital to $1,000,000. These letters announced some time ago that this would be done. This makes that company the largest independent Pipe company in the country. It is now increasing its capacity. The shops interested in work pertaining to the sugar industry are fairly well filled with business for the West India Islands and Mexico and are handling a very fair part of the business for the sugar country in Louisiana. They are not rushed, but are comfortably provided for in the way of secured business.

The officials of the Wilkinson Turbine Company hold a meeting here this week to perfect their organization and plans, and it is given out from their inner councils that the first move will be the erection of a plant that will involve the expenditure of $1,000,000. This is to be a nucleus around which will spring up other industries involving as much more money in their establishment.

The Car Service Association report shows for February a falling off in the cars handled that is very appreciable. The figures are for this year 47,000 as against 64,000 in February, 1904.

Considerable rivalry occurred over a large Barb Wire business for the West India trade, in which the Alabama Steel & Wire Company participated, carrying off all the honors, as it secured the business and is rushed to ship the order. Several suits for damages have been filed against this company on account of the explosion of its Virginia City Mines, and it is very probable that others will follow. The verdict of the State officials was that it was a dust explosion that never would have occurred had their instructions and warnings been heeded.

More or less complaint is still heard of the difficulty of obtaining labor, and its scarcity is a thing to worry those dependent upon it for their successful operation.

For the information of those whose fears have been great concerning the success of the Tennessee Company's steel mill the fact may be stated that it has been brought to a state of efficiency that will compare favorably with any other mill in the country, and, under the existing management, it is now a monument to their knowledge of its needs and of their ability to rectify and supply them. It has reached high water mark in results and is now turning out the largest tonnage in its history.

The great Corliss engine which furnished the power for the lights, exhibits and in part for the street car service at the St. Louis Exposition has been taken to Milwaukee by the Allis-Chalmers Company, which made it, and is now at the West Allis works, where it will remain until a purchaser is found for it. The engine is of the Manhattan type and at full capacity carries 5000 horse-power.

Pittsburgh.

PARK BUILDING, March 29, 1905.—(*By Telegraph.*)

Pig Iron.—While there are no large inquiries for Pig Iron in the market at the present time prices are being asked for some moderate sized lots of Bessemer and Basic for delivery in second and third quarters of this year. Furnaces are not inclined to sell so far ahead at present prices, and are quoting $16 or higher, at furnace, for these deliveries. There is very little Bessemer or Basic Iron available for April delivery, as the furnaces are practically sold up, and the Bessemer Pig Iron Association and W. P. Snyder & Co. now quote $16 for forward delivery. Small lots of Bessemer and Basic can be picked up at $15.50 for April shipment, but such tonnage is small. It is expected the Steel Corporation will buy some Iron for April delivery, but as yet no negotiations have started. Demand for Foundry Iron is fairly active from small consumers, but the large users are pretty well covered for some time ahead. Northern brands of No. 2 are firm at $16, Valley, while small lots are bringing $16.25 to $16.50, at furnace. Forge Iron is quiet, but is firm at $15.15 to $15.25, Valley furnace, or $16 to $16.10, Pittsburgh. A sale of 500 tons of Northern Forge is reported at the latter price.

Steel.—We note a continued scarcity of Open Hearth Steel and as high as $26, maker's mill, has been paid for small Open Hearth Billets for prompt shipment. Bessemer and Basic 4 x 4 inch Billets bring $23.50 to $24, maker's mill. Sheet Bars in long lengths have sold recently at $26, maker's mill. Forging Billets are also very scarce and $27 and upward is being quoted for these, prices depending on carbons. The Steel mills are from three to four weeks behind in deliveries.

(*By Mail.*)

Nothing of special interest has developed in the Iron trade since our last report, the situation having quieted down a good deal after the heavy purchases of Steel and Pig Iron set forth in our report last week. The situation continues exceedingly strong in every way and seems assured on its present basis up to July 1 at least. It does not seem likely, in view of the enormous output of Pig Iron, Steel and Finished Material, that prices can be much higher than they are now.

The minimum price of Bessemer and Basic Pig Iron for second quarter shipment is $15.50, Valley furnace, and some sellers, including the Bessemer Pig Iron Association, are asking $16, but as yet no Iron has been sold at this price. Northern brands of No. 2 Foundry are very firm at $16 at furnace, while some sellers quote $16.25 and up to $16.50. Forge Iron is rather quiet in demand at present and is held at $15 to $15.50, Valley, or $15.85 to $16, Pittsburgh.

The demand for Steel continues very active and sales of small Open Hearth Billets for prompt shipment have been made at $26, maker's mill, while Sheet Bars in long lengths have sold at the same price. Nothing official has been given out as to the price paid by Pittsburgh Steel Company in its purchase of 200,000 tons of Bessemer and Open Hearth Billets, but it is stated the 4 x 4 inch Bessemer and Open Hearth Billets were $22, while the small Billets from 1¾ to 2½ inches were $23, delivered Monessen, these prices being guaranteed against decline in the official price of Steel, which is now $21, delivered in the Pittsburgh district.

The demand for Finished Iron and Steel is quite active in some lines, notably Plates, but on other lines, such as Structural Steel and Wire products, is only fair. There have been no changes in prices since our last report.

Ferromanganese.—There has been a sharp advance recently in prices of Ferro, and 80 per cent. English and domestic is held at $48 to $48.50 for large lots, and $49 to $50 for small lots delivered. It is predicted that prices of Ferro will be much higher than they are now.

Rods.—There is an absolute scarcity of both Bessemer and Open Hearth Rods, both local producers being practically out of the market as sellers. We quote at $34, while Chain Rods are $35, maker's mill.

Skelp.—The demand is rather quiet at present, but the mills are quite busy on contracts on which buyers are specifying very freely. We quote: Grooved Iron Skelp at 1.70c. to 1.75c., Sheared at 1.80c. to 1.85c., Grooved Steel Skelp, 1.65c., and Sheared, 1.70c. to 1.75c. These prices are for ordinary widths and gauges and are f.o.b. maker's mill.

Muck Bar.—There is a fair inquiry for Muck Bar, and we quote best grades made from all Pig Iron at $28.25 to $28.50, Pittsburgh.

Steel Rails.—A fair amount of tonnage for export is being placed, including one order for South America of about 20,000 tons. Some of the larger railroad systems have not yet placed their orders for Rails for this year's delivery, and this is causing some little uneasiness in the trade. We quote Standard Sections at $28, at mill. Light Sections are $26 to $27 for 12 to 16 lb. Rails, and $24 to $25 for the heavier sections.

Structural Material.—Some fairly large contracts have been placed in the past week, among these being the Steel building for a silk mill at West Pittsburgh, 90 x 540 feet, and a Steel building for the Kinnear Pressed Radiator Company, 90 x 600 feet, also at West Pittsburgh, both taken by McClintic-Marshall Construction Company. A great deal of Structural work is in sight, but there is more or less disposition on the part of buyers to hold off placing contracts. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.60c.; Angles, 8 x 8 and 7 x 3½ inches, 1.70c.; Zees, 3-inch and larger, 1.60c.; Tees, 3-inch and larger, 1.65c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—A fair amount of new tonnage is being placed and all the Plate mills have a heavy tonnage on their books, nearly all of which was taken before the advance in prices. Some extraordinary records for output are being made in the Plate mills at the Homestead Steel Works and this plant is in practically continuous operation, closing down for only a few hours on Sundays. Prices are firm and we quote: Tank Plate, ¼-inch thick, 6¼ to 14 inches wide, 1.50c., base; over 14 inches wide and up to 100 inches in width, 1.60c., base, at mill, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edges	$0.10
Gauges No. 7 and No. 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A.," and ordinary Fire Box Steel Plates	.20
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—There is a fair amount of inquiry for Sheets, but most large consumers covered ahead before the advance in prices on March 16. The demand for Roofing Sheets is showing betterment, due to the return of nice weather, permitting outside building operations. Prices are firm and we quote: Black Sheets, No. 24, box annealed, one pass through cold rolls, 2.15c.; No. 26, 2.25c.; No. 27, 2.30c., and No. 28, 2.40c. We quote Galvanized Sheets as follows: Nos. 22 and 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.23c.; No. 28, 3.45c. We quote No. 28 Gauge Painted Roofing Sheets at $1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at $2.95 for 2½-inch corrugation. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—The demand for both Iron and Steel Bars is of moderate volume, but most leading consumers are covered by contracts made before the advance in prices, some of which run up to July or longer and on which buyers are specifying very freely. Some of the Steel Bar mills are considerably behind in deliveries, due to heavy orders on their books and scarcity of Steel. We quote Common Iron Bars at 1.65c. to 1.70c. and Refined Iron Bars 1.70c. to 1.80c., f.o.b. Pittsburgh. We quote Bessemer and Open Hearth Steel Bars at 1.50c. base, in carloads and larger lots, with the usual advance for smaller lots.

Hoops and Bands.—Practically no new business is being placed in either Hoops or Bands, consumers being covered by old contracts on which they are specifying very freely. We quote Steel Hoops at 1.65c. and Steel Bands at 1.50c., base, half extras, as per National Steel Bar card.

Cotton Ties.—It is expected that within a few days

prices of Cotton Ties will be fixed for this year's delivery. As stated last week, the price is certain to be higher than the figure originally set, which was 85c. a bundle.

Tin Plate.—The Tin Plate mills continue exceedingly busy, both on new business and old contracts and are practically sold up for the next two or three months. The announcement of an advance in Tin Plate early in April would not be a surprise to the trade, which is really expecting it. We quote 100-lb. Cokes at $3.50 net, f.o.b. Pittsburgh, terms 30 days, or 2 per cent. off for cash in 10 days.

Merchant Pipe.—The demand for Merchant sizes of Pipe is fairly active, but for oil country goods it is very flat. There is some talk of a large California oil line being placed in the near future and several of the leading mills are figuring on it. We are advised that prices are being firmly held, carload discounts to consumers being as follows:

Merchant Pipe.

	Steel.		Iron.	
	Black. Per cent.	Galv. Per cent.	Black. Per cent.	Galv. Per cent.
⅛ and ¼ inch	67½	51½	65½	49½
⅜ and ½ inch	71½	59½	69½	57½
¾ to 6 inches	75½	65½	74	64
7 to 12 inches	70½	55½	69	53½
Extra strong, plain ends.				
⅛ to ⅜ inch	60½	48½	58½	46½
½ to 4 inches	67½	55½	65½	53½
4½ to 8 inches	63½	51½	61½	49½
Double extra strong, plain ends, ⅛ to 8 inches	56½	45½	54½	43½

Boiler Tubes.—The demand is fairly large, especially for Locomotive Tubes, and the mills are quite busy. Carload discounts are as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	43	46
1¾ to 2¼ inches	43	58
2½ inches	48	60
2¾ to 5 inches	55	66
6 to 13 inches	43	58

Merchant Steel.—An advance of about $4 a ton has been made in Cold Rolled Strip Steel, gauge No. 15 and heavier. Consumers are specifying quite freely on contracts, but volume of new tonnage is only fair. We quote: Tire Steel, 1.65c. to 1.75c.; Smooth Finished Machinery Steel, 1.75c. to 1.85c.; Open Hearth Spring Steel, extra quality, 2.25c. to 2.50c.; Tool Steel, ordinary grades, 5¾c. to 8c.; extra grades, 10c. and upward. We quote Cold Rolled Shafting at 50 per cent. off in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The demand continues very active, and the mills are somewhat behind in deliveries. We quote at $1.70 per 100 lbs. for carloads and $1.75 per 100 lbs. in smaller lots, f.o.b. at mill.

Spelter.—The market has again declined and prices are weak. We quote Prime grades of Western Spelter at 5.87½c., St. Louis, equal to 6c., Pittsburgh. On a firm offer this might be shaded.

Connellsville Coke.—Shipments of Coke from the Upper and Lower Connellsville region last week were 14,831 cars, the output of both regions having been 346,961 tons, these being record breakers for both shipments and output. Strictly Connellsville Furnace Coke continues very strong and readily brings $2.40 to $2.50 a ton, at oven, for shipment over last half of the year; 72-hour Foundry Coke brings $3 to $3.25, at oven. Main Line Furnace Coke brings $2.25 to $2.35 a ton for best quality and Foundry $2.50 to $2.75 a ton at oven.

Iron and Steel Scrap.—The market continues quiet and prices are fairly strong. Small lots of Heavy Melting Stock can be had at $16 to $16.25, but the large dealers quote $16.50, and are holding their heavy Scrap for this price. Other grades are quoted as follows: Bundled Sheet Scrap, $14.50; No. 1 Wrought Scrap, $19.50; Wrought Iron Turnings, $13.50 to $13.75; Cast Iron Borings, $10.25 to $10.50; Steel Rails, short pieces, $15.75 to $16; No. 1 Cast Scrap, $15.25 to $15.50; Iron Car Axles, $22 to $23, all in gross tons, f.o.b. Pittsburgh.

Foster & Green, dealers in Iron and Steel Scrap, Machinery and Rails, will remove their offices about April 1 from the Farmers Bank Building to the Park Building, Pittsburgh.

The American Shipbuilding Company, Cleveland, Ohio, has secured contracts from Captain John Mitchell for two large steamers, which will have a carrying capacity of 10,000 tons each. This makes four orders that this company has for 1906 delivery. The Craig Shipbuilding Company, Toledo, Ohio, has secured a contract for a 500-foot steamer for L. S. Sullivan, at the head of the new Toledo Steamship Company, which proposes to order a number of large vessels. The new boat will have quadruple expansion engines and water tube boilers, and will cost $335,000.

Cleveland.

CLEVELAND, OHIO, March 28, 1905.

Iron Ore.—The situation in the Iron Ore trade, as far as the lake end of it is concerned, has hardly changed during the past week. The controversy between the unions and the lake vessel owners is still hanging fire, and the issue will not be settled until the close of the conference between the longshoremen and the dock managers. Ice conditions are still bothersome, and it is hardly probable that the channels between the lakes will be free of ice before the middle or latter part of April. There is some hesitancy on the part of the vessel owners in making wild contracts for the movement of Ore until these things are settled. In the meanwhile the shippers are content with the contracts already made. There has been some little buying of Ore in anticipation of needs, due to the bright outlook in the Pig Iron market. The situation is strong. Prices hold about as they have been at $3.75 for Bessemer Old Range, $3.50 for Bessemer Mesaba, $3.25 for non-Bessemer Old Range and $3 for non-Bessemer Mesaba, all f.o.b. Lake Erie ports.

Pig Iron.—There has been a good demand for Foundry Pig Iron for all deliveries during the past week. The best indications have been the heavy buying for the last half of the year. The furnace owners offered Iron to their regular customers at current prices for delivery through the second half, making the statement that it was immaterial to them whether the foundries covered or not. The response was heavy. One concern alone made a contract running upward of 20,000 tons of No. 2 for second half delivery and the other furnaces have been selling lots in proportion. With contracts that have been placed before, added to the contracts recently taken, a few of the furnaces have made the statement that they are sold up as far on contract as they dare to sell, for the present at least. The price which has ruled on all advance sales as far as known was $16 for No. 2 Foundry in the Valleys. The Southern furnaces are offering small amounts here at $13.50, Birmingham, plus a $3.85 freight rate to make up the Cleveland quotation. The Basic trade is still strong, with no great amount of material in sight and with the prospects of a good steady demand ahead. The price holds at $15.50 in the Valleys, with one or two small sales made as high as $16. The same condition rules in Bessemer, with the understanding that not much Iron is open for sale for the immediate future. The Coke situation is strong, with the supply still behind the requirements of the market, and deliveries for several reasons being slow and hard to obtain.

Finished Material.—About the strongest point in the market is Billets. The general market, however, here is one where deliveries are the things most concerning the mills. The fact that numerous buyers are compelled to resort to the jobbers to supply their needs is ample indication of the crowded condition of the mills. In one instance this week the buyers of Billets came into the market and asked for material for long time delivery. The quotation was $27, Pittsburgh, for Bessemer Billets, and the understanding is that a lot of 10,000 tons sold at that price, with deliveries impossible until toward the end of the third quarter. Some mills make the statement that they have nothing for sale until the last quarter of the year and that their price is steadily $26 to $27, Pittsburgh, for the Bessemer product. A good many building projects in Cleveland are hanging fire, upon which no demand for Steel has yet appeared. These will be brought to a focus soon and orders will be given. The mills of whom inquiries have been made do not promise deliveries inside of four months. There is also a good demand for Structural from the ship and bridge builders. The Plate trade is also strong, with the supply short, following the general conditions outlined in Structural. The Bar Iron mills in this territory, for the first time in several months, are filled up and have business upon which to run for several weeks. The price holds at 1.65c. to 1.70c., Pittsburgh. The Bar Steel mills are filled and some orders from finishing mills in Northern Ohio have been turned down because prompt shipments could not be made. This has resulted in premiums of $3 a ton being paid to the smaller mills, making the price of Bessemer Steel Bars 1.65c., Pittsburgh. The association price is 1.50c., Pittsburgh. Several carload lots have been sold by the small mills at premuim prices and by the jobbers. This territory during the week produced one order of 12,000 tons of Standard Rails, and there is good buying by both steam and traction lines. The latter promise the biggest development with several extension propositions immediately ahead. There has been a good tonnage offered already and will be closed soon. The Sheet trade is strong at the advance. The mills are now refusing long time contracts, not because an advance is expected, but on general lines, the contracts being a one-sided proposition. Unless the circumstances are unusual the mills will not sell past July 1. The recent advance in prices did not change the situation. The new quotations are: Out of stock, Blue Annealed, No. 10, 2.15c.; No. 12, 2.20c.; No. 14, 2.25c.; No. 16, 2.35c.; American Bessemer, Nos. 18 to 20, 2.55c.; Nos. 22 to 24, 2.60c.; No. 26, 2.65c.; No. 27, 2.70c.; No. 28, 2.80c.; No. 30, 3.20c. In car lots at the mill, Blue Annealed, No.

16, 2.15; American Bessemer, Nos. 18 to 21, 2.20c.; Nos. 22 to 24, 2.25c.; No. 26, 2.30c.; No. 27, 2.35c.; No. 28, 2.45c.; No. 30, 2.70c. Galvanized Sheets out of stock, Nos. 22 to 24, 3.20c.; in car lots at mill, Nos. 22 to 24, 2.90c.

Old Material.—The Scrap market has been a little stronger, with some fairly good buying. The mills, however, have not come in to cover for any amounts, and while they are holding off the Scrap market cannot be expected to become strong. The mills seem to be determined to buy their next batches of Scrap at lower prices and have been hammering the market. The dealers, however, having to pay good prices for their material are holding on for the same old prices. A good many of the quotations therefore are nominal. Prices are quoted, all gross tons: Old Steel Rails, $16 to $16.50; Old Iron Rails, $22.50 to $23; Old Car Wheels, $16 to $16.50; Heavy Melting Steel, $16 to $16.50. All net tons: Cast Borings, $8.50 to $9.50; No. 1 Busheling, $14; No. 1 Railroad Wrought, $16 to $16.50; Iron Car Axles, $21 to $22; No. 1 Cast, $13.50 to $14; Stove Plate, $11 to $12; Iron and Steel Turnings and Drillings, $11 to $12.

Cincinnati.

FIFTH AND MAIN STS., March 29, 1905. (*By Telegraph.*)

Pig Iron.—The past week, so far as actual tonnage is concerned, has been quiet and there are no inquiries in sight that contemplate anything beyond a few small lots. The only sale recorded of any size was 2500 tons for a central Ohio plant, divided 900 tons Virginia and the remainder Northern Iron. This we understand was made on an analysis basis and there may possibly have been a slight shading in figures. The general foundry trade throughout the country is said to be better and they are melting considerable tonnage; this, however, does not apply to the foundries in this city, who are a possible exception and are exceedingly quiet. The furnaces as a rule are holding firm and sustaining prices and are in most instances apparently willing to contract for as late as the last half, although we are told that little is being done for this latter period. We are advised that one of the leading Southern furnaces which until the past week has been holding for $14, is now willing to contract for a limited amount on a $13.50, Birmingham, basis. This latter figure is now well established and while there may be some few special sales made at 25c. advance over these figures, the tonnage is small and of no special moment. Northern brands appear to be slightly stiffer, although we note a change in the ruling quotations from those of last week. The Pipe interests of this vicinity are said to have bought very heavily since the first of the year, but have no considerable stock piled and are apparently willing to take what they can secure that is suited to their needs. Freight rates from Hanging Rock district to Cincinnati, $1.15, and from Birmingham, $2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	$16.75 to $17.00
Southern Coke No. 2	16.25 to 16.50
Southern Coke, No. 3	15.75 to 16.00
Southern Coke, No. 4	15.25 to 15.50
Southern Coke, No. 1 Soft	16.75 to 17.00
Southern Coke, No. 2 Soft	16.25 to 16.50
Southern Coke, Gray Forge	15.25 to 15.50
Southern Coke, Mottled	14.75 to 15.00
Ohio Silvery, No. 1	20.65 to 21.15
Lake Superior Coke, No. 1	17.40 to 17.65
Lake Superior Coke, No. 2	16.90 to 17.15
Lake Superior Coke, No. 3	16.40 to 16.65

Car Wheel and Malleable Iron.

Standard Southern Car Wheel	$18.50 to $19.00
Lake Superior Car Wheel and Malleable	18.00 to 18.50

Coke.—Demand is good and as a rule there is little difficulty in supplying the trade. The car situation enters somewhat into the matter and in some localities trouble is experienced in securing the necessary equipment. Prices are unchanged. We quote for the best grades of Connellsville Foundry from $2.75 to $3, f.o.b. ovens.

Plates and Bars.—As was predicted some weeks since, with the opening of spring Structural work is forging ahead and the mills are said to be sold far ahead. Great delay is being experienced, however, from shortage of cars, which to say the least is unpleasant. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; smaller lots, 2c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.73c., in carload lots.

Old Material.—A fair amount of business is being done, and with the rolling mills becoming heavier buyers dealers hope for better times. Prices, so far as we can learn, are about as they were. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, $17 to $18 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $21.50 to $22 per gross ton; Steel Rails, rolling mill lengths, $14.50 to $15 per gross ton; Relaying Rails, 56-lb. and upward, $23 per gross ton; Iron Axles, $21 to $22 per net ton; Car Wheels, $16 to $17 per gross ton; Heavy Melting Scrap, $14.50 to $15 per gross ton; Low Phosphorus Scrap, $17 to $18 per gross ton.

Labor Notes.

The Employers' Association of Indianapolis, Ind., has opened an employment bureau. No distinction is made between union and nonunion men. When a man applies for work, either at the bureau or at the shops of any members of the association, the application is made on a uniform blank, giving the applicant's name, address, age, whether he is married, general occupation, specialty, years of experience, where last employed, reasons for leaving, class of work desired, &c. If he was forced out of his last place by a strike order this is not held against him unless he was one of the instigators and might be regarded as a disorganizer. A continuous record of each man may thus be kept for many years. The references of the man are inquired into. No charges are made to either applicant or employer, the expenses of the bureau coming from the regular dues of members of the association.

It is likely that before April 1 the Blast Furnace Workers' and Smelters' Union of America, composed of blast furnace labor, will make a demand either for an eight-hour day or an increase in wages, probably the latter. The eight-hour day for blast furnace labor has been agitated several times, but it is claimed that it is not feasible. It is probable that blast furnace labor will be given an advance in wages on April 1 or shortly after, to meet the coming increase in wages for blast furnace labor to be made on April 1 by the United States Steel Corporation.

On April 1 all employees of Nos. 1 and 2 blooming mills at the Lorain Steel plant of the National Tube Company, at Lorain, Ohio, will be put on a tonnage basis. These men have heretofore been paid day wages.

The Indiana Appellate Court, in a recent decision, says that an employer who compromises with an injured workman by agreeing to give him "wages during disability and employment when recovered," cannot escape liability by discharging the man when he finds that he cannot do full work again on account of his injuries. The court affirmed the judgment of a lower court in awarding such a workman $4500 damages from his employer.

Edgar Thomson Furnace Record.—A new record for output of pig iron was made the past week by the 11 blast furnaces at the Edgar Thomson plant of the Carnegie Steel Company, at Bessemer, Pa. For the 24 hours ending at six o'clock Monday morning, March 27, these 11 stacks turned out 5112 gross tons of pig iron. The best previous record for output of pig iron in the same time by these 11 furnaces was 4737 tons, made April 19, 1904. The entire plant is in full operation, and it is expected that some very large records for output of rails will be made in the near future.

At the annual meeting of the stockholders of the Sloss-Sheffield Steel & Iron Company, held in Jersey City March 28, Major Dooley of Richmond, Va., a former director of the Sloss Company and a director of the Seaboard Air Line Railway and other large corporations, was elected a member of the Board of Directors, succeeding J. H. Plummer of Toronto, whose ill-health makes it necessary for him to lessen his business engagements. William E. Strong was elected a member of the Executive Committee, succeeding Robert B. Van Cortlandt. The board subsequently met and organized by re-electing the retiring officers.

Iron and Industrial Stocks.

NEW YORK, March 29, 1905.

The past week has been marked by great activity in industrial stocks, with considerably higher prices, particularly in the stocks of the companies which would be most affected by the proposed Southern iron merger. Tennessee Coal ran up from 89 on Thursday of last week to 98 on Saturday. Sloss-Sheffield common advanced in the same time from 89 to 95½. Republic preferred rose from 76⅛ on Thursday to 83½ on Monday. United States Cast Iron Pipe, which is mentioned also as a possibility in the consolidation, advanced from 87½ on Thursday to 90½ on Monday. The range of prices on some other active stocks during the week was as follows: Can preferred, 63½ to 67⅜; Car & Foundry common 36½ to 39⅜, and the preferred 98½ to 100½; Locomotive common 45⅞ to 52¼, and the preferred 115¼ to 118¼; Colorado Fuel, 53¼ to 59; Pressed Steel common 37 to 41¾, and the preferred 93 to 94½; Railway Spring common 33, extra dividend to 36½, and the preferred 93⅝ to 95¾; Virginia Iron & Coal, 46 to 50; United States Steel common 33¾ to 36⅛, preferred 93½ to 96¼; new 5's, 93½ to 94⅞. Last transactions on active stock up to 1.30 p.m. to-day were at the following prices: Can common 11¼, preferred 65¾; Car & Foundry common 38¾, preferred 99¾; Locomotive common 51, preferred 117; Colorado Fuel, 56¾; Pressed Steel common 40½, preferred 93½; Railway Spring common 35½, preferred 96; Republic common 21¾, preferred 80¼; Sloss-Sheffield common 90, preferred 125; Tennessee Coal, 95⅞; United States Steel common 35¾, preferred 95⅜; new 5's, 94¾.

While the Pressed Steel Car Company, Pittsburgh, Pa., is said to have more orders for steel cars on its books than at any time in its history, the matter of restoration of dividend payments on the common stock has not been officially decided, though it is said that such dividends may be resumed the latter part of this year or early in 1906.

What is denominated as a supplemental mortgage for $10,000,000 by the Republic Iron & Steel Company has been filed in the Recorder's office at Youngstown, Ohio. The instrument is dated March 15 and is to cover the issuance of 30-year 5 per cent. first mortgage collateral trust sinking fund gold bonds. The original mortgage was issued October 1, 1904, and this supplemental mortgage is explained in the following clause of a resolution recently adopted: "The Republic Company in order to further secure said issue of $10,000,000 of bonds has determined to amend some of the portions of said mortgage and also to provide that all property now owned or that may hereafter be acquired by said Republic company shall be mortgaged and pledged to secure said issue of bonds, and to provide that the net cash assets of the Republic company over and above liabilities, other than the $10,000,000 of bonds, shall never be less than $6,500,000 while any of said issue of bonds remain outstanding until the total amount of such issue of $10,000,000 not canceled shall be less than $6,500,000, and thereafter shall never be less than the amount of such $10,000,000 of bonds at any time uncanceled, and to that end has determined to execute and deliver this supplemental mortgage to the trustees."

The annual report of the Nova Scotia Steel & Coal Company, New Glasgow, Nova Scotia, Canada, for 1904 shows profits for the year amounting to $501,337. Brought forward from last year was a balance of $685,642, making a total of $1,186,979 to the credit of the profit and loss account of December 31. The prices obtained by the company for its output were much less than during the preceding year, about $180,000 less being realized than during 1903. The company has on its books orders for a larger tonnage of steel and pig iron than ever before and at better prices than last year. During the year dividends of 8 per cent. were paid on the preferred stock, and a dividend of 3 per cent. on the common was paid on October 15. The regular quarterly dividend of 2 per cent. on the preferred has been declared payable April 15 to stockholders of record March 25.

Dividends.—American Locomotive Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable April 21.

The Hall Signal Company has declared the quarterly dividend of 1½ per cent. on the common and an annual dividend of 6 per cent. on the preferred stock.

Vulcan Detinning Company has declared the regular dividend of 1¼ per cent. on the preferred stock, payable April 20.

E. W. Bliss Company has declared a quarterly dividend of 2½ per cent. on the common stock and 2 per cent. on the preferred stock, both payable April 1.

Pittsburgh Oil & Gas Company of Pittsburgh has declared a quarterly dividend of 2 per cent., payable April 15.

Ohio Fuel Supply Company has declared the usual quarterly dividend of 2½ per cent., payable April 15.

American Nut & Bolt Fastener Company, Pittsburgh, has declared a semiannual dividend of 3½ per cent., payable April 4.

Westinghouse Electric & Mfg. Company, Pittsburgh, has declared the usual quarterly dividend of 2½ per cent. on all classes of stock, payable April 10.

At the regular quarterly meeting of the Board of Directors of the Chicago Pneumatic Tool Company held at its New York offices March 29 a quarterly dividend of 1 per cent. was declared, payable April 20. The only other business of importance transacted was the ratification of the purchase of the Philadelphia Pneumatic Tool Company.

The Cook County Court House Electric Light Plant.

This installation, which is located in Chicago, is an example of an isolated plant in the center of a large city, and is especially interesting therefore on this account, and the more so since it replaces a former plant which had become obsolete. With the experience the engineers had had with the former plant they were in a better position to judge of the advantage of generating their own current than would be the case if it had been an entirely new project. The fact that boilers are required for heating such a large building is undoubtedly a strong argument in favor of combining an electric light plant with this work, since the additional cost of the attendance required is not very great.

The building is lighted by 16 arc lights and 2300 incandescent lamps. The voltage at the switchboard is 125. The generating machinery consists of one 100-kw. and one 150-kw. direct current, engine type, six-pole generators, built by the National Electric Company, Milwaukee, direct connected to engines of the four-valve, single cylinder type, the former running at 225 and the latter at 200 revolutions per minute. The engines are single cylinder with double slide admission valves and Corliss exhaust valves. The pressure of supply steam is 125 pounds per square inch.

The new plant is a great improvement on the former belt driven installation, there being now no appreciable noise or vibration, which is an important requirement of a plant installed in a public building of this nature. On several occasions the generators have had to carry a steady overload of 20 per cent., which they have done very satisfactorily, without any sparking or the necessity of changing the position of the brush holder yoke.

The engine room is conveniently located, being in the basement on a level with the street. This installation is, of course, a municipal plant, and is a mark in the path of the progress of the owning of remunerative investments by municipal bodies in America, and, as mentioned above, is one that must probably have proved remunerative in the past or else the engineers would hardly have recommended the installation of another plant when the question arose as to whether it was better to generate their own current or to take it from a supply company.

The Production of Spelter in 1904.—C. Kirchhoff, special agent of the United States Geological Survey, has just sent out the following statement of the production of spelter in the United States in 1904:

Production of Spelter in the United States.—Short Tons.

States.	1902.	1903.	1904.
Illinois and Indiana	47,096	47,659	47,740
Kansas	86,564	88,388	107,048
Missouri	11,087	9,994	12,150
Colorado	....	877	4,871
Eastern and Southern States	12,180	12,301	14,893
Totals	156,927	159,219	186,702

The extraordinary increase in the production of spelter in 1904 was due chiefly to the growth of the industry in Kansas, where a number of new plants built in 1903 were in full operation.

The Union Drawn Steel Company, Beaver Falls, Pa., manufacturer of cold rolled steel and shafting, will establish a branch works in Hamilton, Ontario, under the name of the Canadian Drawn Steel Company.

A committee of the United States Steel Corporation, consisting of James Gayley, first vice-president; Thomas Morrison and J. Farrell, is in Canada investigating the question of putting up blast furnaces, a steel plant and finishing mills in that country. Action will be taken when the report is at hand.

Repeated rumors are current that important additions are contemplated at the Duquesne works of the Carnegie Steel Company. We are officially advised that there is no truth in the report that four additional blast furnaces are to be erected.

Notes from Great Britain.

The Market.

LONDON, March 17, 1905.—As quarter day is approaching, the amount of business passing is not large. There is considerable unevenness, for contracts are running out, customers are insisting on various small reductions, and firms who affirmed a week or two ago that they would make no concessions are doing so, "swearing they would ne'er consent, consenting." In short, manufacturers of raw material who put up quotations after they had filled their books last quarter day find that they cannot hold out. In pig iron, for example, 44 shillings is still quoted for Northamptonshire forge iron, but 42 shillings is nearer the price.

In the steel market conditions are very similar, £4 12s. 6d. being asked for English sheet bars; but the German price is £4 8s., and merchants are offering it at £4 6s., but in actuality British steel can be obtained at £4 7s. 6d., and even then for a tempting contract the price can be shaded. This irregularity is not productive of business, though as a matter of fact very little is on offer. Finished iron maintains its present position, though there appear to be signs of development in some directions. For example, a little more work has been found for black sheet rollers than has been the case of late, though prices are not so firm, owing to the absence of fresh buying, and galvanizers, for no apparent reason, entertain much more sanguine views concerning the future. There is no change in other directions, one of the most active branches still being that concerned with the rolling of steel plates, angles, joists, channels, &c., for which there is a very well sustained demand.

Tin Plates.

The exports of tin plates for the last two months were well in excess of those for the same period last year, and last month a few thousand tons more were shipped than in January; yet it is a fact that the Welsh industry has of late relapsed into a disorganized and unprofitable condition. Sales have been increasingly pressed, especially by merchants, at successive price reductions, more particularly for oil plates, which now sell about 1 shilling 3 pence per box cheaper than last December. It is evident that the serious labor troubles and revolution in Russia are chiefly responsible for the deadlock. The question is arising as to whether production should not be curtailed.

Profits and Dividends.

At this time of the year a number of dividends are announced. Perhaps the most interesting of all is Vickers, Sons & Maxim, who announce a profit of £191,000 and pay 12½ per cent. on the ordinary shares. This will be in addition to an interim dividend of 5 per cent.

Hadfield Steel Foundry Company, Limited, has had its annual meeting, with R. A. Hadfield in the chair, who announced that in addition to the interim dividend of 5 per cent. paid in August a further dividend of 10 per cent. is now announced plus a bonus of 7½ per cent. He expressed the opinion that the next few years would mean large work for Sheffield.

The North British Locomotive Company announced a reduction of dividends from 10 to 8 per cent., a profit being reported of £232,000, as against £252,000 for the previous year.

The annual meeting of William Beardmore, Limited, of Sheffield has also been held, a profit being announced of £196,000, and a dividend at the rate of 6 per cent. on the ordinary shares, leaving a balance of £95,000 to be carried forward.

Another interesting report is that of the Harvey United Steel Company, whose profits for the year are £109,000, out of which a dividend of 7½ per cent. is paid. The chairman remarked that the main Harvey patent expired in Great Britain toward the end of the year; in France, Italy and Austria in 1906, and in America in 1908. There would undoubtedly be a considerable diminution in the earning capacity of the company on the expiration of the patent, so far as this country was concerned. It did not affect the term of the patent in other countries, however.

The profits for the year of Brown Bayley's Steel Works is £23,322, which carries with it a payment of 5 per cent. The chairman announced a better outlook for trade.

The South Durham Company is at last making up for lost ground. Sir Christopher Furness, M. P., the chairman, said the result of the year's working showed such an improvement that the company had commenced paying the arrears of dividends on the preference shares.

Scotch Steel Combine.

Not a little surprise has been caused by the intimation that the Glengarrock Iron & Steel Company has decided to withdraw from the Scotch steel combine. The combine was formed 14 months ago to work in conjunction with a combine in the northeast of England, and both have been highly successful in maintaining prices and restricting wasteful competition. In the time mentioned the price of angles has been advanced 10 shillings a ton, bars 12 shillings 6 pence, boiler plates 17 shillings 6 pence and ship plates 10 shillings.

Steel Works for India.

Attention has been drawn to the initiation of an industry which is likely to prove of considerable importance in the economic development of British India—namely, the production of rolled steel on a commercial scale from indigenous raw material. This important result has been accomplished at some new steel works erected at Barrakar. At present only some 500 tons of steel are being made per week, but as the demand increases additional furnaces will be erected, and the output can thus soon be doubled. The demand in Bengal alone for various sections used in building construction is very considerable. It is stated that this trade has hitherto been almost entirely in the hands of Belgians. The competition of the Barrakar steel will consequently be for some time to come with the products of Belgian and German rolling mills. Ultimately it is intended to establish large rails mills.

Compound Locomotives on British Railways.

It seems somewhat strange that at a time when the London & Northwestern Company, the pioneer in the practice of compounding locomotives in this country, is abandoning this system, several of the other leading lines should be making serious experiments in this direction, if not actually adopting compounds. Thus the Great Western Company will shortly have two more of the De Glehn type on its road; the Midland is building ten more of its own successful type; Mr. Robinson is building one compound, and possibly two, for the Great Central, and it is rumored that the Great Northern is having one built. It must not be forgotten, however, that both the Great Eastern and Northeastern companies have done away with the compounds on their systems, after a considerable test of their capabilities.

The compounds on the Midland Railway have been most successful, doing some remarkably fast running with heavy loads over the difficult road between Leeds and Carlisle, and also on the southern section. In these engines there is only one high pressure cylinder, placed between the frames, and two low pressure outside cylinders. All drive on the leading axle and the leading and trailing driving wheels are coupled.

Death of R. S. Pollard.

A shocking accident occurred at the Eston Steel Works of Bolckow, Vaughan & Co., Middlesbrough, on March 11, involving the death of R. S. Pollard of Philadelphia. The company is Americanizing part of its plant, and Mr. Pollard was the engineer in charge. One blast furnace, to make 3000 tons of pig iron a week, had been completed and started. It was being inspected by Mr. Pollard and A. Windsor Richards, when there was an explosion of gas in the tubes of the gas plant, and the top of the stove, weighing several tons, was hurled some distance, the *débris* being scattered in all directions. Mr. Pollard was struck on the head by a piece of iron and killed instantly.

The furnace, which is of the most modern type, is provided with a new system of dust catchers and extensive gas tubing, it being intended to use the blast furnace gas for ore roasting purposes. Owing to the great length of the tubing it was feared that air might get in at some

place and produce an explosive mixture. Consequently every precaution was taken, but notwithstanding this an explosion occurred. The seat of the trouble appears to have been in the dust catcher of the second furnace, which has not yet been blown in. All the furnaces are connected. Explosions of the kind are by no means unusual when a new furnace plant is being started. S. G. H.

Metal Market.

NEW YORK, March 29, 1905.

Pig Tin.—The market during the past week was firm and higher, owing to higher prices in London which resulted from the high prices realized at the Banca sale. Business is not such as might be characterized as active. Buyers seem to be purchasing from hand to mouth and are not stocking up with any quantity of metal. During the last two days, however, a somewhat better inquiry from consumers has been noted. The prices realized at the Banca sale to-day were high, being equivalent to 30.55c., c.i.f. New York. This sale consisted of about 1600 tons. To-day's closing prices for spot are 29.87½c. to 30c.; April, 29.50c. to 30c.; May, 29.37½c. to 29.75c. Spot has had a considerable advance in London, while futures have declined slightly, spot quotations to-day being £137 12s. 6d. and futures £134 12s. 6d. The arrivals during the past week have continued light, an aggregate of 2520 tons having arrived this month, with 4301 tons afloat.

Copper.—The market for Copper is very quiet and unchanged. Buyers are only taking small amounts to fill their immediate wants. Quotations to-day for Lake are 15.25c. to 15.37½c.; Electrolytic, 15.12½c. to 15.25c.; Casting Copper, 14.87½c. to 15c. London is slightly firmer, to-day's quotations being £67, 10s. for spot, and futures have declined slightly, being quoted at £67 17s. 6d. Best Selected is lower at £72. The exports so far this month aggregate 17,604 tons, of which 3300 tons were for the Chinese market.

Pig Lead.—The market is unchanged so far as New York quotations are concerned, spot Lead in this market being quoted at 4.50c. to 4.60c. The American Smelting & Refining Company continues to quote for "shipment" Lead in 50-ton lots on a basis of 4.50c. London has again advanced slightly, and quotations to-day are nominal at £12 10s. The St. Louis market has also again advanced, quotations to-day being at 4.50c.

Spelter.—The Spelter market has declined sharply, due to a drop in the price of Ore. Spot, April and May are nominally quoted at 5.87½c. in New York; St. Louis at 5.75c. The London market has advanced slightly, spot stocks being quoted at £23 12s. 6d.

Antimony.—The market is unchanged, Hallett's being quoted at 7⅞c. to 8⅛c., Cookson's at 7.87½c. to 8.87½c., and other grades at 7c. to 7.65c.

Quicksilver.—The market is practically unchanged, flasks of 75 lbs. being quoted at $38. The London market is quoted at £7 12s. 6d.

Nickel.—The tone of the market is quiet. Prices are practically unchanged, large lots being quoted at 40c. to 45c., and larger quantities at 50c. to 60c.

Tin Plate.—Prices remain firm and there is a better demand than usual at this season of the year for Terne Plate. The American Sheet & Tin Plate Company continues to quote on a basis of $3.74 a box for 14 x 20 100-lb. Coke Plates, f.o.b. New York, or $3.55, f.o.b. Pittsburgh. Plates are now held in Swansea at 11s. 6d. The market on the other side is very weak, with little demand.

The Youngstown Iron, Sheet & Tube Company.—PITTSBURGH, PA., March 29, 1905.—The Youngstown Iron, Sheet & Tube Company, Youngstown, Ohio, in addition to building a Bessemer steel plant at Youngstown, Ohio, intends to install mills for the rolling of billets and steel bars, a 10-inch mill, a plate mill and several other smaller mills for the rolling of lighter finished products. The stockholders of this concern, at a meeting held on Tuesday, March 28, authorized the expenditure of $2,500,000 for the building of the steel plant and its accessories. Plans are now being prepared and contracts will be placed in a short time. The continuous mill recently installed by this concern has been put in operation and is doing everything expected and will increase the heating capacity about 150 tons per day, the mill being good to roll all the material that can be heated. The mill is already turning out from 300 to 450 tons per day.

New York Pig Iron Warrant Market.

The amendments to the rules of the New York Produce Exchange, providing for trading in foundry, Bessemer and basic irons separately, have apparently met the requirements of those desiring to deal in pig iron warrant certificates. It is evident from the increased sales of last week that the change has stimulated the market to some extent, which, with the larger demand for certificates, has caused considerable activity. The total sales were 2200 tons, of which 700 tons of No. 2 foundry were sold at $16.75, February delivery. Other transactions were March, 500 tons, $16.70 and 100 tons, $16.65; April, 100 tons, $16.50, 100 tons, $16.60 and 100 tons, $16.65; May, 100 tons, $16.60, and 500 tons, $16.70. There were no transactions in Bessemer and basic certificates.

The following quotations were established on call Wednesday noon:

	Regular.		Foundry.		Bessemer and Basic.	
	Bid.	Asked.	Bid.	Asked.	Bid.	Asked.
Cash	$16.50	$16.80	.....	.....	.....	.....
March	16.50	16.80	$16.75	$17.25	.....	.....
April	16.40	16.60	16.75	17.00	.....	$17.00
May	16.50	16.70	16.60	17.00	$16.50	17.00
June	.....	17.00	16.60	17.00	16.50	17.00
July	.....	17.00	.....	17.00	16.50	.....
October	.....	.....	16.75	17.25	.....	.....
February	.....	.....	16.75	17.00	.....	.....

Passaic Steel Company.—At a meeting held in the Hanover Bank Building, New York, last week by the directors of the Passaic Steel Company, whose works are at Paterson, N. J., it was voted to increase the capital stock by an issue of $1,000,000 of preferred 7 per cent. cumulative stock, which will be offered to the stockholders for cash at par. The directors present underwrote enough of the new stock to insure the success of the plan. Most of the proceeds from the sale of the stock will be used for enlarging the plant. It is the intention to add four 50-ton open hearth furnaces, which when completed will give the company 11 open hearth furnaces all told. At the same meeting Niven McConnell was elected vice-president and general manager, to take effect April 1. Mr. McConnell was for many years superintendent of the open hearth department of the Homestead Works of the Carnegie Steel Company, and has until now been general manager of the Union Steel Works, Donora, Pa.

The Coal & Iron National Bank of the City of New York, Liberty and West streets, New York, is located in the heart of the coal, iron and machinery trades of the city. Its selection of that vicinity was primarily for the purpose of securing the business of these important interests. The bank will celebrate its first anniversary on April 11. During its short existence it has had a rapid growth in its business. Beginning with deposits of $752,617.83 on April 12, 1904, it showed on the comptroller's call on January 11 of this year deposits of $3,324,114.21. Its capital stock is $300,000 and surplus $180,000. Its board of 30 directors is a very strong one, consisting of railroad officers, manufacturers and officers of other banks and trust companies.

The office of district manager of the steel plants of the Carnegie Steel Company at Sharon, South Sharon and New Castle, Pa., heretofore held by John Reis, will be abandoned. Mr. Reis was recently appointed assistant to W. E. Corey, president of the United States Steel Corporation, and the plants named will continue under separate management.

A typographical error appears on page 1083 where the Williams Electric Machine Company, Akron, Ohio, was referred to as the Williams Electro Machine Company.

The Lackawanna Steel Company at West Seneca, N. Y., has begun the erection of six additional open hearth furnaces.

The Machinery Trade.

NEW YORK, March 29, 1905.

The month is closing with conditions just about the same as they were at its opening. At that time the review of the month previous showed that the net results were better than most machinery merchants were aware of. So at the close of this month a little retrospection with the sales book at hand shows that business was really better than was suspected during the month, when the amount of inquiry so greatly overshadowed the orders placed that the latter seemed insignificant by comparison. A notable feature of the machinery trade has been the placing of numerous small orders by large concerns, who have specifications out for long lists of requirements. This seems to indicate that large appropriations covering the purchase of all the machinery required have been withheld by the financial interests and as the plant superintendents have, in view of rush of work at their plants, been forced to install some new equipment, they have gone ahead and purchased individual machines contained in their lists. If the large machinery lists now before the trade will be disposed of piecemeal in this manner a very satisfactory solution of the problems before the machinery trade at present will have been found. The last month has presented one of the first evidences of extraordinary activity in a particular line. The demand referred to is a most healthy one, for the materials purchased are for export. Things are so shaping themselves in connection with the development of the sugar industry in Cuba and Porto Rico that the situation presents all the ear marks of a coming boom in sugar mill and refinery equipment before the summer season is far advanced.

Extensive Purchases for Cuba, Porto Rico and Mexico.

The work of reorganizing the sugar producing properties of these islands, which has been going on quietly for three or four years past, has now reached a stage where the time is ripe for the purchase of machinery on a large scale. Some of these purchases are now being made, but by far the greater proportion remain to be closed during the next few months. The most prominent concern involved in this work is the Cuba Company, which has its main offices at 80 Broadway, New York. This is the company with which Sir William Van Horne is so prominently identified. Another company, with which some of the same capitalists as are interested in the Cuba Company are identified is the United Fruit Company, which has its purchasing offices at 6 to 10 Battery place, New York. The engineering and final supervision over the purchasing for both of these companies are conducted by Hugh Kelley, 61 Wall street, New York. Mr. Kelley has just closed contracts for the principal equipment for a new mill to be erected at Jatibonico, Cuba, by the Cuba Company. The contract for a 36 x 84 inch nine-roll mill and crusher plant was awarded to the Fulton Iron Works, St. Louis, Mo., last week. This company also received the order for the engines required for driving the mill, which will consist of a 600 horse-power and a 250 horse-power unit. The boilers we are informed were secured in England and the sugar machinery was placed in France.

The placing of these contracts in Europe brings to light a serious phase of the present situation in Cuba. European machinery builders are offering their products at figures very much below those quoted by American manufacturers. This mill will be the largest in Cuba, but it is understood in the trade that Mr. Kelley has plans completed and will soon place contracts for two other new mills which will be still larger.

The Guanica Centrale, having offices at 44 Wall street, New York, is now placing contracts for about $200,000 worth of sugar mill machinery to be installed in Porto Rico. Machinery merchants here state that they have submitted bids on the principal items of equipment, but we are unable to learn at this time whether the contracts have been placed or not.

The Central Fajardo Company is spending about $500,000 on a sugar plant, to be constructed at Fajardo, Porto Rico, and while all the large machinery has been bought, the company is in the market for some smaller machines. The concern has merged several small plants, and the orders for machinery placed are to be ready for shipment on April 1. The company will produce crystallized sugar. The plant, which is expected to be in working order by fall, will use 1000 tons of cane a day. The company has placed orders for crushers with the Farrell Foundry & Machine Company, Ansonia, Conn., and has ordered Babcock & Wilcox water tube boilers and Oats' quadruple effects. The firm of L. W. & P. Armstrong, 106 Wall street, New York, is placing the contracts, J. Bliss Coombs having charge of the purchasing.

The New York office of the Platt Iron Works Company, Dayton, Ohio, of which Geo. W. Neff is manager, has just closed a very interesting contract with F. Matarazzo & Co., Sao Paulo, Brazil, which called for upward of $45,000 worth of machinery to constitute a complete cotton oil mill and refinery. The plant is to be of 80 tons capacity.

The Mexican Light & Power Company is purchasing machinery for a large machine shop to be installed at Rio de Janeiro for the Rio de Janeiro Tramway, Light & Power Company. The shop will be constructed during the present summer, and the list of purchases to be made includes drill presses, lathes and various smaller machine tools. The shop will be run by hydraulic power, and the water turbines will probably be purchased in Europe. The company is also preparing to build about 200 miles of electric railway besides a power plant, for which the Mexican Light & Power Company will purchase electric generators and other machinery. Walter P. Plummer, who is at the office of the latter company, 29 Broadway, New York, is the purchasing agent, and he says that the cost of machinery and construction for the entire undertaking will be $5,000,000.

Machine Screw Manufacturers' Association Planned.

There has been talk during the week among the manufacturers of machine screws of the formation of an association among firms interested in that trade. Although from all accounts nothing definite has been done toward organization, several manufacturers admitted this week that the matter has been under consideration. Manufacturers of set and cap screws who are also interested in the production of machine screws are said to be most keenly interested in the plan. There has been more or less of a rate war in the set and cap screw market for some time past, and there has been a decided disposition of late among some of the manufacturers toward arranging a schedule of rates. The recent absorption of the Hartford Machine Screw Company, Hartford, Conn., and the Western Automatic Screw Company, Elyria, Ohio, by the Standard Screw Company is thought to have brought about the disposition to form a trade combination on the part of other manufacturers.

Public Works.

Work has been begun on the new dry dock that is to be constructed at the Brooklyn Navy Yard, N. Y., the contract for which was awarded to G. B. Spearin, who represented Spearin & Preston. The company has established an office at the Navy Yard, and all the buying and other business connected with the building of the dock will be transacted there. The contractors have purchased two Lidgerwood cableways from the Lidgerwood Mfg. Company, New York, and three 125 horse-power locomotive boilers from James Beggs & Co., New York. The cableways are of the Lidgerwood traveling type, each being 810 feet long. They are to be operated by two 14 x 18 inch three-drum Lidgerwood hoisting engines, and each outfit will handle an orange peel bucket having a capacity of 2 cubic yards. The towers will be mounted on track wheels, permitting them to be moved sideways as desired. Spearin & Preston are in the market for a centrifugal pump and a pressure pump, and perhaps they may be obliged to make additional purchases in that line. The contractors are also expecting to purchase steam hammers of a description not decided upon as yet. It has not been settled whether steel or timber piling will be used in the construction of the dock, but if the former material is decided upon the company will make some extensive purchases of that material. Samuel L. Waller is in charge of the work of construction as superintendent. He was formerly with Westinghouse, Church, Kerr & Co., and was superintendent of construction of the Pensylvania Railroad's Long Island City power house. James Garnett Basinger is the engineer in charge, Caleb Hyatt is assistant engineer and August Siegele, Jr., is mechanical engineer, they constituting a purchasing committee.

S. Pearson & Son, Limited, contractors for the East River section of the Pennsylvania Railroad tunnel, have just awarded contracts to the Exeter Machine Works, 26 Cortlandt street, New York, for eight electric haulage engines or cable drivers, which are to operate the muck wagons used in taking the excavations out of the tunnel. Each machine will be equipped with a 30 horse-power motor, and will operate a steel cable to which the muck wagons are attached by means of a special grip so arranged as to open automatically and release the car before it reaches the bulkheads. This safety device is provided to prevent the jamming of the bulkhead. The entire equipment is of a special nature, being designed to meet the requirements of the contractor.

The Cosmos Contracting Company, 215 Montgomery street, Brooklyn, N. Y., which recently received contract for constructing the Brooklyn anchorage of the new Manhattan bridge, which is to span the East River between the Brooklyn Bridge and the Williamsburg Bridge, is now placing contracts for the machinery required for the fulfillment of its contract. It has just placed an order with the Lidgerwood Mfg. Company for about $20,000 worth of electric hoisting machinery. The order calls for 16 hoists of various sizes, each being equipped with two drums, two winches and a swinging gear.

The O'Rourke Engineering Construction Company, 1 West Thirty-fourth street, New York, has just placed a contract with the Lidgerwood Mfg. Company for six electric hoists, each to be equipped with two drums, two winches and a swinging gear.

Shipbuilding, Railway and Power Plant News.

The first step was taken toward assuring the establishment of a shipbuilding plant at Halifax, N. S., when it was announced on Monday of this week that the Canadian Government has decided to grant a bounty of $6 per ton to encourage steel shipbuilding in the Dominion. It will be remembered that the city of Halifax and the Provincial Government have already granted bonuses amounting to $300,000, which, with the tonnage bounty offered by the Federal Government, are expected to be sufficient inducement for a responsible party to take the matter up. As was noted in these columns last month, prominent business men of Halifax have organized the Shipbuilding & Investment Company for the purpose of getting the enterprise started on a large scale. The best site in the port for a shipbuilding plant has been secured and it is the intention to have some prominent shipbuilding concern already in existence take hold of the new venture. The company is now about in a position to negotiate with responsible parties who may wish to undertake the enterprise. Geo. S. Campbell of Geo. S. Campbell & Co., commission merchants, Halifax, is the president.

We can now officially state that the Bessemer & Lake Erie Railroad will make improvements to its lines this year to cost in the neighborhood of $285,000. These will include the erection of new shops for car repairs at Greenville, Pa., which will necessitate the expenditure of $25,000 for buildings and mechanical equipment. Most of the money to be spent for other improvements will be used for new tracks.

Lockwood, Green & Co., architects and engineers for industrial plants, 93 Federal street, Boston, Mass., have been retained as consulting and constructing engineers by James Pyle & Sons, New York, for their new plant to be located at Edgewater, N. J., near the plant of the American Glucose Company. Plans have just been prepared for a power plant equipment, the installation of which will consist of three horizontal tubular boilers of 150 horse-power each, and an equipment of induced draft capable of running five such boilers, one Corliss engine with direct connected electric generator of 160 kw. capacity, one high speed engine direct connected to a 60-kw. generator and the necessary piping, feed pumps, traps and other accessories. A little later plans will be prepared for the motor equipment and wiring for the same, as well as the wiring for the lighting of the plant, and steam piping for the heating of the building. The entire plant is to be operated electrically. Frank W. Reynolds is in charge of the work for Lockwood, Green & Co.

The Commonwealth Electric Company, Chicago, Ill., which, it will be recalled, has installed three 5000-kw. Curtis turbine units, together with Alberger condensers and accessories, has just placed contracts for the fourth generating set of the same type and capacity. The Alberger condenser system will consist of high vacuum surface condenser, guaranteed to maintain a vacuum of 28½ inches, using Chicago River water and having a Corliss circulating pump and vacuum pump. Alberger feed water heaters have also been ordered.

Through the engineering firm of Stone & Webster, Boston, Mass., T. R. Van De Grift of the Platt Iron Works Company, Dayton, Ohio, has just closed a contract for $75,000 worth of hydraulic electric power generating machinery, to be installed in connection with the St. Quyx River power development in Minnesota. The contract consists principally of 16 turbines, each unit or pair of turbines having a capacity of 4200 horse-power operated under a head of 55 feet. This will give the entire plant a capacity of about 35,000 horsepower. An interesting feature of this contract was the short space of time allowed the manufacturer for the completion of the works. The contract stipulates that 50 per cent. of the entire equipment is to be delivered by June 15. In order to accomplish this the plant of the Platt Iron Works Company will be operated day and night, employing its full complement of 2000 men.

Other Industrial News.

The Williamsburg Paper Mfg. Company, Williamsburg, Pa., which is erecting a plant to cost about $600,000, has just placed contracts for additional machinery equipment. An order was given to the Exeter Machine Works, 26 Cortland street, New York, for the coal and ashes handling machinery, amounting to about $15,000. The company is now receiving proposals on a number of circulating pumps, to be installed in connection with the condensing system. The plant will have a boiler department consisting of eight 250 horse-power Heine water tube boilers, and will have a main generating set consisting of an Allis cross compound condensing engine direct conected to an 850-kw. Bullock generator. The lighting set will consist of a 200-kw. alternating current Bullock generator direct connected to an Allis engine, while the engines driving the paper machinery will be operated by four 100 horse-power Buckeye engines. Westinghouse induction motors have been purchased for the operation of all the electrically driven machinery. J. T. Finn, 163 Columbus avenue, is constructing the plant and purchasing the equipment. It will be recalled that this is the company in which Chas. M. Schwab is financially interested.

Dodge & Day, engineers, Philadelphia, Pa., who were commissioned some time since by the Lehigh Coal & Navigation Company to take charge of its extensive shop improvements at Lansford, Pa., including new buildings, machine tools and electrical equipment—in fact, all details in connection with such a lay out—have been further commissioned to take charge of the erection of a new centrally located power plant. This plant will provide current for the shops, Tamaqua & Lansford Street Railway, and electrical equipment which will be installed in the mines for pumping and transportation purposes. Dodge & Day are now investigating the latter subject and specifications will shortly be sent out by them. Herbert Clarke, engineer for the Tamaqua & Lansford Street Railway, will co-operate with them.

In the course of a short time the Riverside Foundry & Machine Works, J. A. Touhill, proprietor, Pittston, Pa., will likely be in the market for a nice lot of machinery for equipping its proposed new buildings. The concern has secured the property at Scranton, Pa., formerly used by the Lackawanna Iron & Steel Company, where it will remove its plant as soon as the necessary repairs to the buildings can be made. The new site comprises 6 acres of ground with the Delaware & Hudson and Delaware & Lackawanna railroads running on either side. There are several large brick buildings on the property, the main one being a foundry, 60 x 106 feet, with two annexes, 46 x 87 feet and 44 x 46 feet, respectively. There is also a pattern shop, 36 x 66 feet, and the foundations for a machine shop, 60 x 200 feet, are laid, while a new boiler shop is to be erected. At the present time Mr. Touhill is only in the market for a new cupola, blower and other foundry equipment, as it is his intention to get the foundry in operation as soon as possible. The plant at Pittston will not be shut down until the new one is ready to receive the equipment from the old buildings. In the matter of machine tools nothing definite has been decided, and it is probable that purchases of these will not be made until the machinery now in use is installed in the new buildings and it can be ascertained just what is needed. The Riverside Foundry & Machine Works manufactures engines, boilers, shafting, pumps, gearing and mining machinery.

John Maxwell of the National Casket Company, Oneida, N. Y., has just purchased the plant of the Oneida Iron Works, which he will devote to the manufacture of hermetically sealed steel caskets and boxes. These will be built according to patents just secured by Mr. Maxwell. In the manufacture of these goods Mr. Maxwell will employ a line of special machinery which he will soon purchase. This equipment will consist, aside from the special tools, of a number of very large presses and several smaller presses of different types and cornice brakes. He is also in the market for several gasoline engines. As the project is still in its early stages of development, the exact list of machinery required has not been definitely decided upon as yet.

Business Changes.

The National-Acme Mfg. Company, Cleveland, Ohio, manufacturer of Acme automatic multiple spindle screw machines, Acme semiautomatic screw slotters, cap screws, set screws, &c., announces the consolidation of its New York and Philadelphia offices at 95 Liberty street, New York, under the management of L. M. Waite, formerly in charge of the Philadelphia office, with S. G. Goodrich assistant.

The Ridgway Machine Tool Company, Ridgway, Pa., has selected the following agencies to represent its new line of boring mills, radial drills, driving wheel lathes, engine lathes, planers and hydraulic presses: New York, Prentiss Tool & Supply Company; Pittsburgh, the Baird Mfg. Company; Cleveland, Motch & Merryweather Machinery Company; Chicago, Marshall & Huschart Machinery Company.

The Prentiss Tool & Supply Company, 115 Liberty street, New York, has just opened an additional branch, which will be located at Syracuse, N. Y. A suite of offices has been engaged at 535 University Block, and the branch will be in charge of L. H. Stone, who was connected with the Buffalo office of the company. The latter office will continue in charge of Mr. Crane.

Catalogues Wanted.—Catalogues and prices on machinery, mill and mining supplies are desired by the Tennessee Mill Supply Company, 204 Commerce avenue, Knoxville, Tenn., which has been organized to carry on a general mill supply business. The company will be ready for business by about April 1. Geo. H. Manning, the president, has been in the mill supply business for a number of years, having recently been in charge of that department of the Woodruff Hardware Company, which had the misfortune of having its building destroyed by fire in November, in consequence of which the mill supply department was abandoned. Henry F. Manning, vice-president, has also had a great many years of practical experience in the mill supply business, and J. H. Henderson, secretary and treasurer, has been with the Woodruff Hardware Company for the past 21 years.

New England Machinery Market.

WORCESTER, MASS., March 28, 1905.

The condition of the machinery trade shows no marked change. The demand is not strong as a rule, especially among the dealers, yet both dealers and manufacturers see a good deal of encouragement in the situation. New textile mills promise a considerable demand for machine tools for their repair shops, as inquiries indicate. This class of customer is usually valuable only when new mills are built. A textile manufacturer seldom replaces tools. Probably there is no better place anywhere to observe old styles of machine tools than in an old woolen or cotton mill. The economy of modern machines even for repair work does not appeal to the textile manufacturer, no matter how enterprising he may be in keeping abreast of the times with his textile machinery. Inquiries are by no means limited to the textile industry. They are numerous generally and promise much good business. New repair shops, connected with automobile stations, are requiring a good many new tools in the aggregate.

The Pratt & Whitney Company, Hartford, and the Brown & Sharpe Mfg. Company, Providence, are very busy, the former company running overtime three evenings a week. The demand is for both machine and small tools.

The Fenn-Sadler Company, Hartford, Conn., has bought the exclusive right to manufacture the automatic slotting machine formerly built by the W. H. Gates Company, Worcester, Mass.

George H. Archibald, 65 Riverside avenue, Medford, Mass., contractor, is to build an addition to his shop and will want a circular saw, band saw and planing machine.

The Potter & Johnston Machine Company, Pawtucket, R. I., manufacturer of automatic chucking and turning machines and universal shaping machines, will make large additions to its plant this spring. One addition will be 42 x 240 feet and one story, and the other 40 x 70 feet and two stories. The purpose of the new buildings is to increase general manufacturing facilities, the additional space being made necessary by the rapid growth in the company's business.

Baxter D. Whitney & Son, Winchendon, Mass., manufacturers of wood working machinery, are to build an addition to their works to extend their machine shop facilities. The building will be 75 x 150 feet, one story, with monitor roof.

The American Paper Tube Company, Woonsocket, R. I., which is building a new plant in that city, is in the market for pumps. All other equipment has been purchased.

The Forester Mfg. Company, Dixfield, Maine, is to enlarge its factory for the manufacture of toothpicks. The enlargement will consist of a one-story machine shop, 30 x 32 feet; a two-story addition to the main factory, 37 x 200 feet, and an office building. None of the new equipment, including the tools for the machine shop, has been ordered.

The Simplex Piano Company, Worcester, Mass., manufacturer of automatic piano players, has purchased the four-story brick building at Charles and Blackstone streets, and will occupy it for the manufacture of the cases for its instruments, which have formerly been purchased from outside parties. The building will be equipped with modern tools, and a new engine, boiler and electric generator will be installed. The orders have not been placed.

Cleveland Machinery Market.

CLEVELAND, OHIO, March 28, 1905.

Machinery dealers say that business is opening up most encouragingly and that an improvement has been noticed each week for several weeks past. New projects which have been started this spring have not yet developed much business, but a great deal of the trade is coming from those who are throwing out an obsolete tool here and there and installing something more modern and of greater capacity.

The most interesting development of the past week was the announcement that the White Sewing Machine Company was preparing plans for an enormous plant. The company has been an extensive manufacturer of sewing machines for many years, and four years ago it took up the manufacture of steam automobiles. It has not recently added to the size of its plant, but it has been manufacturing parts in factories in various parts of the city and assembling in others. During the past year the company built about 1000 large touring cars and employed six factories in different processes of the work. This year the output will be larger, and better facilities have become imperative. The company has just purchased 15 acres of land fronting on St. Clair street and the Lake Shore & Michigan Southern Railway in what has heretofore been the residence district, as it adjoins the city's largest park. An option has been taken on a larger tract adjoining this and it may be purchased. The piece already bought cost $100,000. The company states that it will more than double the capacity of its plant. The concern is a wealthy one and buys nothing but the best material and machinery, so that a modern plant may be expected.

To Make Crucible Steel by New Process.

The large plant of the Standard Motive Power Company, at Canal Dover, Ohio, was sold at receiver's sale last week for a combination of interests that held liens, and it was bid in at $11,000. The plant has since been acquired by Cleveland men, who propose to engage in the manufacture of crucible steel under a new process. A specialty will be made of high speed steel, which it is claimed can be produced at reduced cost by the process. The unfinished buildings at the Canal Dover plant will be completed and five additional buildings will be erected at once. The new buildings will include a main rolling mill, 150 x 500 feet; melting floor building, 75 x 100 feet; power house, 80 x 100 feet, and two smaller buildings, 40 x 60 feet. One of the largest of the present buildings will be utilized for machine shop. We are informed that the equipment to be installed will include the following: A 36-inch pot furnace, three steam hammers, 10-inch rolling mill, muck mill, puddling furnaces, power equipment with about 1000 horse-power of boilers, machine tool equipment, cranes, &c. The company hopes to be manufacturing steel in four months. The names of the parties are withheld for the present.

The Garrett-Cromwell Engineering Company, Cleveland, is preparing plans for a complete new steel plant for the Detroit Iron & Steel Company. It will include an open hearth steel castings plant equipped with two 15-ton furnaces. The main building will be about 165 x 400 feet, of steel construction. Large cranes will be installed, and the engine, boiler and electrical equipment will be of the most modern type.

The plant of the Machinery Forging Company on Hamilton street was destroyed by fire a few days ago. The company produces drop forgings for machine tool work and operates a number of large steam hammers which were more or less damaged. The company expects to rebuild. Harry S. French is president and H. C. Komraus is general manager.

The P. A. Geier Company, Cleveland, has incorporated with $10,000 capital stock by P. A. Geier and others. The company has opened a factory at 50 High street, where it will do high grade model work and experimental work requiring precision. The company is preparing to install a number of new machine tools, including lathes, grinders, shapers, &c.

The C. O. Bartlett & Snow Company reports an unprecedented demand for cement dryers and it is preparing to increase its facilities for producing these machines. Recently the company bought an 84-inch boring mill and it will install other tools. Among recent orders for dryers and cement machinery were those of the following concerns: Iroquois Portland Cement Company, Caledonia, N. Y.; Sandusky Portland Cement Company, Sandusky; C. Schidt & Co., Chicago; Wm. Allerdice, Saratoga, N. Y.; Blake Mining & Milling Company, Denver, and the Gringnard Brick Company, Columbia, S. C.

The Erie Railroad Company has installed considerable new machinery at its shops at Galion, Ohio, and we are informed that about all the tools required for the present are either on order or being installed. Recent purchases for these shops include the following: Bement-Miles vertical milling machine, Yankee drill grinder, Landis grinder, Bement-Miles drill press, 72-inch Niles boring and turning mill, two 24-inch Flather shapers, 24-inch Bement slotter, Pratt & Whitney turret lathe, 36-inch Pond engine lathe, two 12-inch Hendey engine lathes, one Chambersburg steam hammer, double spindle centering machine and a high speed friction drill press. The majority of the tools were ordered from the Niles Tool Works and Manning, Maxwell & Moore.

The American Castings & Register Company, Akron, has been formed with $25,000 capital stock by George N. Dugot, Daniel Motz, W. H. Kroeger and others. The company will take over the business of the American Castings Company and will manufacture hot air registers. The plant and foundry will be enlarged, but we are informed that no new machinery will be installed for the present.

The National Water Wheel Governor Company, Akron, Ohio, organized a short time ago by Frank S. Replogle, formerly of the Replogle Company of that city, is considering the erection of a new plant, although the matter will not be taken up immediately. The company manufactures water wheel governors and is having its machines built in a local shop. The company states that it is crowded with orders.

The Schneider Machinery Company, Cleveland, is negotiating for the purchase of the plant of the Geneva Automobile & Mfg. Company, Geneva, Ohio, which has been idle for some time. It is proposed to form a new company with the Kloeb Gas Appliance Company of Cleveland as a basis. If the deal goes through the Schneider Company will install new machinery and manufacture gas fixture appliances on an extensive scale.

Expensive improvements are to be made on the ore docks of Lake Erie ports this spring. The McMyler Mfg. Company of this city is rushing work on several large contracts for hoisting and conveying machinery, which must be placed in operation soon after the ore season opens. It is erecting

two clam shell unloaders, each having a capacity of 150 tons per hour for the Buffalo Union Furnace, Buffalo; two revolving cranes with clam shell buckets for the Philadelphia & Erie Railway at Erie, each to have a capacity of 100 tons per hour; car dumping outfit with a capacity of handling 30 cars per hour for the Pittsburgh Steamship Company at Ashtabula; 15-ton crane at the quarries of the Kelley Island Lime & Transportation Company on Kelley Island, also a machine for loading sand for the same company at Sandusky.

Power Station Notes.

The Standard Machinery & Equipment Company, Cleveland, has purchased the entire equipment of the Louisiana street power station of the Indianapolis Street Railway, including 1000 horse-power boilers, 1500 horse-power engines and 650 kw. of generators.

The Lake Shore Electric Railway has recently acquired the Lorain Street Railway and is preparing to install a substation in the Lorain power station. When this is done the Lorain equipment will be disposed of. It consists of several large units, two of them direct connected. The Lake Shore Electric Railway is also offering for sale the equipment of its Milan, Ohio, power station, which was recently abandoned. Warren Bicknell, Electric Building, Cleveland, is president of the company.

The Columbus, Delaware & Marion Railway Company, Columbus, Ohio, has placed contracts with the General Electric Company for three 2000 horse-power Curtis turbo-generators, one of them to be installed immediately. Boilers and other equipment have not yet been purchased. Portions of the present power station equipment will be abandoned. George Whysall, Columbus, is general manager.

The Mansfield Railway, Light & Power Company, Mansfield, Ohio, is preparing to install two 500-kw. Bullock generators. As soon as these are in operation it will take out considerable of the present equipment.

The Marietta Water Works Department of Marietta, Ohio, is preparing to install a large high duty pumping engine manufactured by the Builders Iron Foundry Company, Providence, R. I.

Philadelphia Machinery Market.

PHILADELPHIA, PA., March 28, 1905.

While the past week has not developed any startling amount of new business, the trade is generally well satisfied with existing conditions. The market has been improving steadily for several weeks, and manufacturers of machinery and tools have taken on quite a good volume of business. Dealers have in some cases experienced a decline in the sales of small tools, but orders for a few large ones have brought the total sales for the week to satisfactory figures. Inquiries in nearly all branches of the trade continue in good volume. There is quite an amount of what might be called speculative inquiry to establish the probable cost of new equipment, &c., but a good proportion of the inquiries received lead up to business fairly promptly. Deliveries of some lines are becoming more or less extended; special tools and special machinery cannot as a rule be delivered as promptly as some months ago, while some sizes of standard tools, such as lathes, cannot be delivered by some manufacturers for three and four months. Some plants are nearing the full capacity mark, while those who are positively dull are extremely few and far between.

The shipyards are having an increased demand for vessels, and some business is likely to develop from these sources in the near future. The railroads are still holding back on specifications for any large equipment, but are placing orders here and there for a few tools, largely for replacement. Some of the Southern roads, it is understood, are about ready to come on the market—if they have not already quietly done so—with some good specifications for tools. The improvement in weather conditions will help the trade materially; work which has been held up all winter is being pushed forward, and considerable business will eventually result from the improvements to and expansion of plants now under way.

W. C. Johnson, who is well known in the machinery trade, has severed his connection with Alexander Foster, New York, and will hereafter represent the Diamond Drill Machine Company, Birdsboro, Pa., in its line of Wagner cold saws, Jackson belt lacing machines, punches, shears, rolling mill machinery, open hearth steel, air furnace and cupola castings.

The Textile Machine Works, Reading, Pa., is about completing a new machine shop, 50 x 200 feet, four stories high. The building is of reinforced concrete and brick, and contains no combustible material except the floor boards. The shop will be used for the general manufacture of its textile machines and the equipment will consist largely of medium weight machinery and tools.

Plans for two modern ice breakers for use in the Delaware Bay and River, patterned after the powerful ice crushers used on the Great Lakes, have been prepared for the city of Philadelphia and were considered recently by a committee representing the maritime interests of the city and various city officials. Announcement has been made that bids for the construction of these vessels would be advertised about April 1. Two hundred and fifty thousand dollars will be available for building one vessel, and it is expected that councils will appropriate what amount will be necessary to complete the two vessels.

The Wm. Cramp Ship & Engine Building Company has taken a contract to build a large merchant vessel for the Ward Line, to be used in the West Indian trade. The new liner will be of 7000 tons displacement, 400 feet long and 50 feet beam. Specifications under which this ship will be built indicate that the vessel will eclipse, both in construction and appointment, any vessel in the above trade, except perhaps the Morro Castle, of the same line.

The Harlan & Hollingsworth Company, Wilmington, Del., has contracted to build for the New York, New Haven & Hartford Railroad Company four steel car floats, having a capacity of 24 cars each, for use in New York harbor and Long Island Sound. They are to be 327 feet long, 40 feet beam and 10 feet depth of hold.

Hilles & Jones Company, Wilmington, Del., has taken the contract for the new boiler shop equipment of Charles Ervien & Co., Philadelphia, the erection of whose new plant was mentioned recently in these columns. The Hilles & Jones Company has also received contract for plate straightening rolls, punches and shears and bending machines for beam and channel work, from the Levering & Garrigues Company, New York, for the structural plant. Another structural outfit recently placed on the books is for the Fort Pitt Bridge Works, Cannonsburg, Pa. These outfits, together with a number of single orders from railroads, boiler shops and structural works, have made the month's business one of good proportions.

The Murray Iron Works Company, through its Philadelphia office in the Bourse, sold last week two 50 horse-power Murray Corliss engines to George Grayson, the Darby Woolen Mills, Darby (near Philadelphia), Pa. These parties have several other large deals pending and look for quite an active business in the near future.

Cincinnati Machinery Market.

CINCINNATI, OHIO, March 28, 1905.

The week just closing, while showing quite an active condition, has been less productive in the way of new orders than was the week previous. A fair normal condition prevails among the plants, with a few of them running overtime, on special work, necessitating quick delivery. General jobbing foundry conditions are far from satisfactory, and while there is no trouble to speak of among the molders, there is a general complaint among the foundrymen of dearth of business. One prominent foundryman remarked that they debated the question for some time to-day whether or not they should run a heat, and only decided to do so on account of previous labor troubles. There has been a persistent rumor that several of the larger concerns, now occupying space in the bottoms would in the near future make arrangements for moving to a new location in the suburbs, where they already own considerable ground, but we can scarcely see how this can be true, as at least one of the larger of them has purchased ground adjoining the buildings it now occupies, with the intention of erecting buildings suitable to its needs upon it. There is one phase of the situation among the trades that is far from satisfactory, and that is the threatened strike among the structural iron builders. The men recently demanded that their employers increase their scale of wages from 30 to 50 cents per day, but up to the present this proposition has met with a refusal on the part of the employers. The men held a meeting last Wednesday evening, and decided to give employers until April 1 to meet their demands, upon the refusal of which they would strike. A strike among this class of workers could hardly be more illtimed for the progress of the city, as at this particular date there are more large buildings in process of erection than at any period for years past. There will be quite a large representation of machine tool men from this city attend the National Machine Tool Builders' meeting in Washington, D. C., next month. Mr. Lodge, the president, is making detailed arrangements for the convention and anticipates a profitable meeting.

The Cincinnati Machine Tool Company reports trade as excellent, with a notably large increase from abroad. The demand from this source, however, does not begin to compare with the increase in inquiry from this country, which has been remarkable during the past month.

The Lodge & Shipley Machine Tool Company says that it has no reason for complaint and that it has plenty of work booked. Since the removal of the Oesterlein Machine Tool Company the company is adding the floor space formerly occupied by this concern to its plant and equipping and arranging it for the manufacture of countershafts.

The Oesterlein Machine Tool Company has every reason to feel gratified with the change from the old to the new location. Since locating in its present quarters trade has been

much better and prospects are far better than they were. The company is constantly adding to its equipment such machinery as it needs, which, with the rearrangement of the present tools, very materially increases facilities.

The Fosdick Machine Tool Company notes quite a perceptible change in conditions for the better. It has been doing considerable foreign business during the past two months, several shipments for Japan being including.

The Cincinnati Milling Machine Company is contemplating making some improvements to its plants. Its trade has increased to such an extent during the last year that this is made necessary in order to take care of orders received.

The R. K. Le Blond Machine Tool Company says that there is greater demand for smaller tools than the larger. It has been doing a fine export trade and says domestic inquiry is greatly on the increase.

The Cincinnati Planer Company, which recently received a large order for tools from the Bethlehem Steel Corporation, reports a general distribution of trade, with prices holding firm.

The John Steptoe Shaper Company has done considerable business with the Japanese and other foreign powers during the preceding two months. The company is working overtime and has orders far ahead.

The Sebastian Lathe Company says that it is very difficult to secure orders from some of the foreign countries on account of the extra heavy duty that builders of tools in this country have to pay. It is, however, apparently securing its proportion of this trade and is very busy.

The J. A. Fay & Egan Company has bought considerable new machinery and it is said will in the next month begin the erection of a building adjoining the present site. It will then rearrange its tools and with this added equipment will be in a position to handle its rapidly increasing business.

It is said that the Johannigman Foundry Company will erect a $35,000 plant at Spring Grove avenue and Sassafras street, this city.

Government Purchases.

WASHINGTON, D. C., March 28, 1905.

The mechanical equipment that will be required by the Isthmian Canal Commission, bids for which will soon be asked, includes 12 steam shovels, six air compressors with a capacity of 2500 feet of air per minute, 75 pneumatic rock drills, six sets of blacksmith's tools for making bits, six sets of blacksmith's tools for making shanks and 75 extra air heads for the drills. Bidders on the air compressors will be required to state the rate at which they will give option for the calendar year for an additional number of similar compressors not exceeding six.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until April 25 for a quantity of supplies for the Mare Island and Puget Sound navy yards, including gap lathe, milling machine, motors, &c.

The Department of the Interior, United States Geological Survey, Washington, D. C., will receive bids until May 16 for the construction of about 45 miles of the main canal for irrigation of lands in the North Platte Valley in eastern Wyoming and western Nebraska. The work involves the excavation of about 2,800,000 cubic yards of earth and 150,000 cubic yards of rock.

Standard Size Price Sheets Desired.

The machinery dealers are making a strong effort to persuade the manufacturers whom they represent to adopt a standard size of price sheets. The agitation is not a new one, but it is receiving fresh impetus under somewhat organized agitation. The reasons for the standardization of price sheets are given in a circular letter which one large Western house is sending out to the dealers throughout the country, as follows:

"First. The elimination of error incident to copying prices. This would apply not only in the case where an actual mistake occurred in copying figures, but an unfortunate abbreviation made in an attempt to economize on space might easily be the cause of a later misunderstanding.

"Second. The elimination of delay in copying prices. It frequently happens that prices on several different lines of machines are changed simultaneously. In fact, this is the rule rather than the exception. A delay under these circumstances in entering new prices in salesmen's price books is almost unavoidable.

"Third. Compactness and convenience. Standard printed sheets would furnish salesmen the means of complete and ready reference, which is often a most essential factor in determining the success or failure of an attempted sale."

The great majority of salesmen, not only of machine tools but of many other kinds of machinery supplies and of metal lines generally, use a price book which requires loose leaves of given size. The leaves, unless of standard size, must be typewritten by a clerk, who does the work in manifold. Generally abbreviations are employed. Not all the information of the original sheets is transferred. A mistake may become a very serious matter, and they have been made, with unpleasant consequences to all concerned—manufacturer, dealer and customer. Another disadvantage is that manifold sheets may be indistinct or may become so from the smudging of the carbon printing. The idea of the dealers is that when a price sheet is issued the manufacturer shall provide them with enough copies so that each salesman can have an original for his price book.

New York.

NEW YORK, March 29, 1905.

Pig Iron.—Only a moderate volume has been done in Foundry Iron in this district and in New England. A Steel plant in the district has purchased 8500 tons of Basic Pig, and is in the market for additional quantities. Electrical interests have purchased some round lots. We continue to quote for Northern Iron, tidewater, $18.25 to $18.50 for No. 1 Foundry, $17.50 to $17.75 for No. 2 Foundry, $17 to $17.50 for No. 2 Plain and $16 to $16.50 for Gray Forge. Alabama and Tennessee Irons are quoted $17.50 to $17.75 for No. 1 Foundry and $17.25 to $17.50 for No. 2 Foundry. Foreign Foundry Iron could probably be laid down at competitive prices at New England points, but the founders in that section are usually very conservative as to their mixtures.

Steel Rails.—A feature in the situation is that railroads which purchased some time since are coming into the market for additional quantities. A member of the anthracite roads are referred to as having come forward with additional inquiries. We continue to quote $28 for Standard Rails in quantities above 500 tons.

Cast Iron Pipe.—The trade is at last waking up and inquiries are coming in from a variety of sources. The prospects are very promising for an exceedingly good year. While no large lettings are in sight, the general demand indicates a good volume of business in the near future. The foundries are well supplied with work and manufacturers are less anxious to take orders than usually at this time of the year. The feeling prevails that prices will shortly be advanced in correspondence with the great strength of the Pig Iron market. Prices are as yet quoted on the basis of $26.50 for 6 to 8 inch in carload lots at tidewater.

Finished Iron and Steel.—The leading bridge interest reports a very fair week. Altogether orders were entered for 20,000 tons, made up of a great number of small orders. The current month will probably figure up a larger tonnage than any month for some time. About 15,000 to 20,000 tons of railroad work from Eastern railroad companies are shortly coming on the market. A very nice quantity of light work for manufacturing enterprises is also about to be placed. Building work in this city and vicinity is still light, so far as structures using fabricated Steel are concerned. A few projects are in prospect, but they are very slow to develop into contracts. Plates and Bars show an improving demand, which is to be expected as the weather becomes more favorable for outdoor work. Quotations at tidewater are as follows: Beams, Channels, Angles and Zees, 1.74½c. to 1.84½c.; Tees, 1.79½c. to 1.89½c.; Bulbs, Angles and Deck Beams, 1.84½c. to 1.94½c.; Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine, 1.94½c. to 2.04¾c.; Fire Box, 1.94½c. to 2.50c., according to specifications; Refined Bar Iron, 1.74½c. to 1.84½c.; Soft Steel Bars, 1.64½c. to 1.74½c.

Old Materials.—While some dealers report difficulty in finding buyers for such material as they have to offer, others have been much more fortunate. One of the leading local houses reports the past week as its banner week for volume of business for many months. The largest sales made have consisted of Old Steel Rails and Steel Scrap. Transactions are reported of one block of 3000 tons of Old Steel Rails, another of 1000 tons, another of 700 tons, and one of 3000 tons of Steel Scrap. The sales of Cast Scrap have also been very good. Business is strongest with the Steel works and foundries. While some of the rolling mills are well stocked and will buy nothing at present, others have been obliged to enter the market, and sales are reported to such mills which have run in certain cases up to as high as 1000 tons of Busheling Scrap and 1000 tons of Cast Borings. It is always to be expected at this time of the year that a much greater quantity of Scrap will be available than during the winter months, but while some look for an increased supply and lower prices others are confident that the quantity coming out will prove to be considerably less than the fall stocks which were cleaned out during the winter months and that the supply may therefore be found inadequate to meet consumptive requirements. Quotations per gross ton, New York and vicinity, are approximately as follows:

Old Iron Rails	$22.00 to $22.50
Old Steel Rails, rerolling lengths	16.50 to 17.50
Old Steel Rails, short pieces	16.00 to 17.00
Relaying Rails	20.00 to 21.00
Old Car Wheels	17.50 to 18.50
Old Iron Car Axles	22.00 to 23.00
Old Steel Car Axles	19.00 to 20.00
Heavy Melting Steel Scrap	16.00 to 17.00
No. 1 Railroad Wrought Scrap	20.50 to 21.00
No. 1 Yard Wrought Scrap	18.50 to 19.00
Iron Track Scrap	18.00 to 18.50
Wrought Pipe	14.50 to 15.50
Ordinary Light Iron	11.00 to 12.00
Cast Borings	9.00 to 10.00
Wrought Turnings	12.50 to 13.50
No. 1 Machinery Cast	16.00 to 17.00
Stove Plate	13.50 to 14.50

The Sloss-Sheffield Steel & Iron Company.

The Sloss-Sheffield Steel & Iron Company has issued its annual report for the fiscal year ended November 30, 1904. The income account compares as follows with the previous year:

	1904.	1903.
Profit on pig iron*	$303,093	$1,139,146
Profit on coal, depreciation deducted	185,444	216,265
Profit on coke	155,295	175,961
Ore and dolomite sales	392	64,343
Rentals, royalties, &c	154,169	208,939
Company's proportion N. Alabama Fur. Company	†27,027	58,388
Total income	$771,367	$1,863,043
Taxes and license	34,838	31,786
Balance	$736,529	$1,831,257
General expense	42,892	35,616
Net earnings	$693,637	$1,795,641
Bond interest	210,000	210,000
Surplus	$483,637	$1,585,641
Preferred dividends	469,000	469,000
Surplus	$14,637	$1,116,641
Previous surplus	2,315,762	1,199,122
Total surplus	$2,330,399	$2,315,763

* After deducting for depreciation on iron ore and 25 cents per ton on the pig iron made for extraordinary repairs and renewals. † Deficit.

The general balance sheet as of November 30, 1904, compares as follows:

	1904.	1903
Assets.		
Property account	$18,375,306	$18,311,417
Treasury securities	259,700	259,700
Stocks and bonds in other companies	311,995	311,995
Cash, bills and accounts receivable	1,344,109	1,149,192
Supplies raw and finished material	464,998	790,071
Stocks in company's stores and warehouses	164,939	192,004
Extraordinary renewal and repair fund	147,337	208,548
Insurance and taxes unexpired	12,068	17,078
Totals	$21,080,452	$21,240,005
Liabilities.		
Preferred stock	$6,700,000	$6,700,000
Common stock	7,500,000	7,500,000
Bonds	4,000,000	4,000,000
Current accounts	484,948	469,646
Pay roll	65,104	78,469
Bills payable	.....	176,128
Profit and loss surplus	2,330,399	2,315,763
Totals	$21,080,452	$21,240,005

In his report, President J. C. Maben reviews the adverse conditions prevailing in the iron trade in 1904, and gives some details regarding the Southern coal miners' strike. Continuing, he says:

"Notwithstanding this strike, which existed five months of the fiscal year, we succeeded in keeping all six of the furnaces owned wholly by the company in blast for the entire period, except No. 1 furnace, which was stopped temporarily for repairs and is again at work, and the make of iron exceeded by 71,000 tons the largest yearly production since the company was organized, against a decrease in production in the State for the year of 107,885 tons, while the production of coke was within 4500 tons of the best year.

"While from the causes enumerated (especially the low price of iron) the earnings for the year were not what we could have wished, there is cause for encouragement and some satisfaction to be found in the fact that despite the adverse conditions, the earnings were sufficient to pay the usual dividend on the preferred stock, a considerable sum for the improvement of properties, to add somewhat to the handsome surplus carried over from the previous year, and add $100,000 to working capital, making it now nearly twice the amount originally set apart for that purpose.

"The present year opened with very different conditions in the iron markets of the country, and with present prices and the accumulation of about 50,000 tons of iron carried over from last year, on which no profit has been counted, it is reasonable to believe that the result of business for the year will be entirely satisfactory.

"The company has no floating debt whatever, and its interest account shows a large credit balance for the year. All of the furnaces are in good condition, and with a regular supply of coke, which has been somewhat interfered with by the strike of the coal miners, should maintain their best records.

"A comparative statement of the products of the company for several years is given below in gross tons:

	1904.	1903.	1902.	1901.
Pig iron	382,267	311,093	287,685	218,857
Coal	1,400,669	1,501,956	1,287,826	1,042,296
Coke	544,767	549,201	453,054	339,199
Red ore	500,274	377,080	284,482	221,789
Brown ore	236,230	260,539	298,700	234,661
Dolomite	83,961	115,635	101,069	101,349

"The above figures of pig iron embrace only the product of six furnaces owned entirely by the company.

"The working capital amounts to $1,921,822."

Wooden Stave Pipe.—An interesting paper on the manufacture of wooden stave pipe was read by W. C. Hawley before the Engineers' Society of Western Pennsylvania, March 21. Such pipe is made of pine, fir or redwood staves having concentric inner and outer surfaces and radial edges, held in place by round or oval steel bands, these bands being secured by a coupling shoe arranged with a thread and nut. A large power development scheme is mentioned as having become a commercial possibility by the saving made by changing part of a line of 7-foot riveted steel pipe to wooden stave pipe. In the eastern part of the country the following installations of such pipe have recently been made: The Cambria Steel Company, Johnstown, Pa., several miles, of diameter between 40 and 50 inches; at Atlantic City, N. J., 9807 feet of open canal replaced by a 42-inch pipe, at a cost of about $2.90 per lineal foot; at Lynchburg, Va., 106,000 feet of 30-inch pipe for the city water supply.

The Bessie Ferro-Silicon Company, Wyandotte Building, Columbus, Ohio, is now repairing and remodeling the Bessie Furnace at New Straitsville, Ohio, which will enable the well-known brand of Bessie silicon iron again to be put on the market in the near future. The company states that the improvements now under way, when completed, will put it in position to furnish a better quality of iron than has ever been produced at that furnace, and it is claimed that a better grade of ferrosilicon, running from 10 to 14 per cent. in silicon, will be made than is now being manufactured in this country. It is expected to be in position to book orders in about a month. Robert A. Magly, for seven years with Fieser & Bentley while operating the Bessie Furnace, is general manager of the company.

The Turner Falls Company, Turner Falls, Mass., is to erect a power plant consisting of four 1000-kw. generator units, two 300-kw. generators for light loads and one 75-kw. exciter generator, all water driven and direct connected to water wheel shafts, together with one motor driven exciter of 75 kw. One 1000-kw. Bullock generator and the 75-kw. exciter are to be installed shortly, the apparatus having been ordered from the Allis-Chalmers Company. The water power at Turner Falls is being developed for commercial uses and promises to become a factor of considerable importance in the industrial activity of that section of Massachusetts.

All records of output have recently been exceeded at the New Castle Works of the Carnegie Steel Company at New Castle, Pa. The night turn at this plant turned out 1284 tons of steel in 12 hours, while in eight hours 1008 tons were turned out.

HARDWARE.

THE advocates of a domestic parcels post are evidently planning a very active campaign during the Congressional recess, no doubt bearing in mind the fact that more than 100 new Congressmen will take their seats when the House reconvenes, a number quite sufficient to determine the fate of any legislative measure. The education of the new Congressman appears to be one of the chief objects of this movement and already considerable literature has been placed in the hands of the new members. It would hardly seem to be necessary to advise the retail Hardware trade to go to work promptly for the purpose of offsetting this renewed activity on the part of the parcels post promoters, but it is obvious that it will be too late to accomplish much after the new members have been pledged in writing to favor these populistic schemes.

The making of catalogues by the Hardware jobbers has been carried to a degree of perfection which gives such volumes a distinguished place in trade literature. Their size, comprehensiveness, excellence of typographical work and fullness of illustration are noteworthy. When, however, they are carefully analyzed there is found to be little more than an illustration of the article and a list of numbers and sizes. There is practically nothing to inform the merchant as to the special qualities, the particular merits or the selling points of the goods. The retail merchant who looks through his various jobbers' catalogues for information which will enable him to buy most intelligently or for points to make use of in talking to his customer will look in vain. On this account the catalogues are less interesting to the retail merchant than they might be and less resultful in securing business.

This is a matter of especial importance in these times when the progressive jobbers are giving constantly increasing attention to mail order business. Where there is an intelligent salesman to represent the jobber he can supply the deficiencies of the catalogue and explain to the merchant the advantages which the various goods possess and the opportunities which they offer for profitable handling. A catalogue can never quite take the place of the personal salesman, but it should endeavor to do so to a certain extent and as far as possible. A catalogue giving such particulars would involve some additional labor in compilation, but it would be far more interesting to the merchant and of greater practical usefulness, so that it would unquestionably materially stimulate the purchase of goods direct from the house.

In all this something is obviously to be learned from the catalogues of the mail order houses. The great success of these catalogue houses results largely from the fact that their catalogues are skillfully compiled, giving full, sometimes glowing, perhaps exaggerated, descriptions of the tools or devices to which they relate. A great deal of business is secured in this way. There is a hint here of a method which may be advantageously adopted in dealing with the trade. Similar information given to merchants would result also in awakening their interest and in many cases in securing their orders. The preparation of a jobber's catalogue designed to secure orders from the retail trade in which there would be the same painstaking care to give information which would be serviceable to the merchant would yield large returns. The manner in which the goods would be described in such a catalogue would naturally be somewhat different from that adopted by the retail mail order houses, but the general principle which governs in the preparation of the catalogues of the catalogue houses, so-called, might well be to a good extent followed by the wholesale distributers of Hardware. It will thus be seen that the jobbers as well as the retailers have something to learn from the methods of their competitors in the mail order business, whose activity, enterprise and success cause them so much solicitude.

Condition of Trade.

March has been undoubtedly an improvement upon February, but on the whole has been somewhat disappointing in its volume of business. There is, however, less complaint in the Western than in the Eastern part of the country. While the South is not finding everything up to the expectations it entertained some months ago it is being recognized that there is no reason why there should not be a large and prosperous business during the year. Export matters are showing an increased volume of trade in articles in the Hardware and related lines. With the coming of spring weather the retail merchants are finding their business opening up satisfactorily, and those who are wise are maturing and putting into execution plans for the aggressive and enterprising marketing of their wares. The advance of the season naturally quickens efforts in this direction. The market, as will be seen in the following reports, has some changes in prices, but the general run of Hardware articles are without modification. The strength of the Iron market and the outlook for business gives manufacturers confidence in producing goods, but with the increase in their facilities many of them are desirous of having more orders than are at present coming in to them. Indeed in some instances there are evidences of a willingness to make slight concessions to secure immediate business. Thus there is the anomalous condition of increasing strength in the raw material and the prospect of at least sustained, if not higher, wages, with the suggestion of a shading of prices in some lines. Efforts on the part of manufacturers to control the market by means of pools or combinations continue to give steadiness if not present strength to lines in which there would otherwise be quite a different state of things.

Chicago.

Business is booming again, and jobbers are compelled to work nights in many departments to keep up with the demands upon them. It is thought that an unusually large number of new Hardware stores is being equipped, judging from the many "new stock" orders that are being shipped. This indicates admirably the general situation west of the Alleghanies, because new stores are not apt to be started when existing ones are not making money. Demand for Barb Wire is particularly keen, shipments of the last week exceeding in volume any week in the year thus far. Nails, too, are in good demand, particularly Wire Nails, though concessions made on Cut Nails serve to stimulate business temporarily in that line. The recent advance in Black Sheets has been reflected in a much firmer tone on Eaves Trough, Conductor Pipe and other finished products in Galvanized, and while no actual advance has been announced, prices are on an average 5 per cent. higher than before the advance on Sheets, due to the fact that price concessions below official figures are no longer obtainable. Steel Goods, Contractors' Tools, Garden Tools and Implements are moving well. An advance on Chisels has been unofficially announced. Builders' Hardware is in good demand, not only in the city, but throughout the West. There is no cloud on the Hardware horizon, and retailers and jobbers are equally encouraged.

NOTES ON PRICES.

Wire Nails.—Indications point to a revival of demand, which has of late been somewhat light, in the way of new business. There has been a gradual increase in purchases during the present month, while mills have also been filling contract orders. The market is firm in tone at the following prices, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....$1.80
Carloads to retailers..... 1.85

New York.—Demand is fair, and continued weather favorable for out of door building operations will increase the requirements of the trade. The market is firm and New York quotations are as follows: Single carloads, $1.99; small lots from store, $2.05.

Chicago, by Telegraph.—While there has been a marked increase in the business booked on Barbed and Smooth Fence Wire, the improvement in the Nail business is not quite on as satisfactory a basis as the other products. The months of January and February were poor Nail months. March has developed better and better with each week, and it is now thought by the Nail interests that April and May will be exceptionally large months and that the business will extend later into the spring and summer than usual. Prices are unchanged at $1.95, base, in car lots to jobbers; $2 in car lots to retailers, with 5 cents advance for less than car lots from mill.

Pittsburgh.—Some little betterment was reported in demand for Wire Nails, probably due to the favorable weather, and a steady increase in new business is expected from this time forward. The mills still have plenty of contracts on their books, but buyers have not been specifying very freely on these contracts for some time. Improvement in this direction is also expected with the return of good weather, permitting the resumption of outside building operations. We quote: Wire Nails in carloads to jobbers, $1.80; carload lots to retailers, $1.85, and in less than carload lots at $1.90, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days.

Cut Nails.—In Western territory the shading of prices by some manufacturers to carload buyers has resulted in a concession of about 5 cents from the official quotations of Wire Nails. Other manufacturers are, however, holding strictly to Wire Nail prices. Demand is moderate, both in new business and on specifications on contract orders. Quotations are as follows: Carload lots, $1.80; less than carload lots to jobbers, $1.85, and to retailers, $1.95, f.o.b. Pittsburgh, Iron Cut Nails, for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents advance per keg on Cut Steel Nails.

New York.—The market remains firm, with a moderate demand. Prices are unchanged and New York quotations are as follows: Carloads on dock, $1.94; less than carloads on dock, $1.99; small lots from store, $2 to $2.05.

Chicago, by Telegraph.—The agreement between makers of Cut Nails is like a good many other gentlemen's agreements, and it is pretty hard to quote actual prices on Cut Nails for this reason. In general, the car lot price to any purchaser may be taken to average 5 cents below the official prices on Wire Nails to jobbers, although there are some makers of Cut Nails who are holding firmly at the Wire Nail price, which is $1.95, car lots, to jobbers; car lots to retailers, $2; less than car lots to jobbers, $2, and to retailers, $2.10.

Pittsburgh.—New demand is light and specifications are coming in very slowly. With the return of good weather and the opening up of spring trade a material increase in demand for Cut Nails is confidently expected. We quote: Carload lots, $1.75 to $1.80; less than carload lots to jobbers, $1.85, and to retailers, $1.95, f.o.b. Pittsburgh. Iron Cut Nails for delivery at Pittsburgh, Buffalo and all points west of these cities, 10 cents per keg advance over Steel Cut Nails. The above price of $1.75 on Steel Cut Nails is minimum of the market and is obtainable only by the large trade and for desirable orders.

Barb Wire.—In the West orders are being received about a month earlier than usual, owing to weather favorable to fence building. Further East demand continues light. The market is firm in tone. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Chicago, by Telegraph.—The early spring has served to give the month of March the business in Barb Wire that is usually transacted in April, and both the manufacturing and wholesaling interests in Chicago tell the same story of difficulty in keeping pace with the demand. Prices are unchanged as follows: Car lots to jobbers, Painted Wire, $2.10; Galvanized, $2.40; car lots to retailers, 5 cents higher; less than car lots, Painted Wire, $2.25; Galvanized, $2.55; Staples, Bright, $2.05; Galvanized, $2.35.

Pittsburgh.—Demand has been very dull for some time, but is expected to improve from this time forward. Prices are firm, but unchanged. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$1.95	$2.25
Retailers, carload lots	2.00	2.30
Retailers, less than carload lots	2.10	2.40

Smooth Fence Wire.—Similar conditions rule to those in Barb Wire. While Eastern demand at this time is light Western requirements are brisk. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....$1.65
Retailers, carloads..... 1.70

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago, by Telegraph.—Reports of the leading producer in this market are to the effect that the Western demand is exceptionally large and that it is only with difficulty they can keep pace with it. Prices are firm and unchanged, as follows: $1.80 base, for Annealed Wire, in car lots to jobbers; $1.85 in car lots to retailers, with 5 cents advance for less than car lots, and 30 cents premium over Annealed for Galvanized.

Pittsburgh.—Demand has been somewhat light for some time, but with the advent of good weather and the opening up of spring trade will no doubt materially improve. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....$1.65
Retailers, carloads..... 1.70

Carriage Bolts.—In the announcement of the prices adopted by the manufacturers of Carriage Bolts which was made in our issue March 16 an error was made in quoting Common Carriage Bolts longer and larger than ⅜ by 6 inch at discount 65, 10 and 7½ per cent. The correct discount on these goods as announced by the manufacturers is 65 and 10 and 2½ per cent. The market on this line of goods continues firm, with an excellent volume of business.

Hatchets.—There has been some expectation throughout the trade that an advance in Hatchets might be expected to go into effect about April 1. No such advance has, however, we are advised, been determined upon, and this line of goods remains without change.

Axes.—April 1 a reduction of 25 cents per dozen will be made in the price of Axes. Thus the advance made February 15 has been withdrawn and the goods go back to the prices which were in effect January 1.

Binder Twine.—Demand thus far in the present month has been comparatively light for the season, and it is understood that a few of the less prominent concerns have resorted to some shading of prices to stimulate buying. There appears to be a feeling, more or less general, for which there is no definite basis, that the International Harvester Company will soon announce

prices and enter the market again as sellers. The question as to what prices will be when they are announced is also one of interest to the trade. The market is fairly represented by quotations ¼ cent in advance of those announced at the beginning of the season, as follows:

	Per lb.
Sisal	9¾c.
Standard	9¾c.
Standard Manila (550 feet)	10¾c.
Manila (600 feet)	12c.
Pure Manila (650 feet)	13¼c.

Five-ton lots, ⅛ cent less; carload lots, ¼ cent less, Chicago delivery, usual terms of payment. Kansas City, Omaha, Council Bluffs and Minneapolis, ¼ cent added. Prices not guaranteed. Allowing for freight, New York prices would be ¼ cent lower than the above.

Chisels and Drawing Knives.—We give below new list prices on Chisels, Gouges, Drawing Knives, &c., which have been adopted by the manufacturers of these goods under date March 22. It will be seen that a thorough revision of lists is thus made. New discounts are also announced which carry, it will be seen, a substantial advance in the prices of these goods. The regularly announced discounts to the smaller trade are as follows:

	Discount.
Carpenters' Slicks	75 %
Corner Chisels	75 %
Framing Chisels	75 %
Socket Firmer Chisels	75 %
Socket Paring Chisels	75 %
Socket Millwrights' Chisels	75 %
Socket Firmer Gouges	33 1-3 %
Socket Paring Gouges	33 1-3 %
Socket Millwrights' Gouges	33 1-3 %
Tanged Firmer Chisels	33 1-3 %
Tanged Turning Chisels	33 1-3 %
Tanged Firmer Gouges	33 1-3 %
Tanged Turning Gouges	33 1-3 %
Regular Drawing Knives	75 %
Razor Blade Drawing Knives	75 %

The new list prices of Chisels, Gouges, Drawing Knives, &c., are as follows, and are subject to the discounts named above:

Tanged Firmer Chisels.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$2.00	$2.00	$2.25	$2.75	$3.00	$3.25
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$3.50	$4.00	$5.25	$6.00	$7.50	$9.00

Assorted in Sets.—⅛ to 2 (12), per set, $4.25; ⅛ to 1½ (9), $2.75; ⅛ to 1 (8), $2.25. When above are wanted with handles add $1 per dozen, list. For Beveled Edge add 50 cents per dozen, net.

Handled Tanged Firmer Butt Chisels.

Inches.	¾	1	1¼	1½	1¾	2
Per dozen	$4.25	$5.00	$6.25	$7.00	$8.50	$10.00

Assorted in Sets.—¾ to 2 (6), per set, $3.50. For Beveled Edge add 50 cents per dozen, net.

Long Thin Tanged Paring Chisels.—Not Handled.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$4.00	$4.00	$4.25	$4.75	$5.25	$6.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$7.00	$8.50	$10.00	$12.00	$14.50	$17.00

Assorted in Sets.—⅛ to 2 (12), per set, $8.25; ¼ to 2 (8), $6.50. When above are wanted with handles add $1 per dozen, list.

Tanged Turning Chisels.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$3.00	$3.00	$3.25	$3.60	$4.00	$4.50
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$5.00	$5.75	$7.25	$9.25	$11.25	$13.25

Assorted in Sets.—⅛ to 2 (12), per set, $6.50; ¼ to 1½ (9), $4.50. When above are wanted with handles add $1 per dozen, list.

Tanged Firmer Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$2.50	$2.50	$2.75	$3.00	$3.50	$3.75
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$4.25	$4.50	$6.25	$7.75	$9.25	$11.50

Assorted in Sets.—⅛ to 2 (12), per set, $5.25; ⅛ to 1½ (9), $3.25; ⅛ to 1 (8), $2.50. When above are wanted with handles add $1 per dozen, list.

Handled Tanged Firmer Paring Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$8.50	$8.50	$9.00	$9.50	$10.00	$10.50
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$11.00	$12.50	$15.00	$17.50	$20.00	$24.00

Assorted in Sets.—⅛ to 2 (12), per set, $13.50; ¼ to 2 (8), $10.50. Without handles deduct $1 per dozen, list.

Tanged Turning Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$3.75	$3.75	$4.25	$4.75	$5.25	$6.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$7.00	$8.00	$10.00	$13.00	$15.00	$18.00

Assorted in Sets.—⅛ to 2 (12), per set, $8.50; ¼ to 1½ (9), $5.50. When above are wanted with handles add $1 per dozen, list.

Tanged Millwrights' Firmer Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$7.50	$7.50	$8.00	$9.00	$10.00	$11.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$12.00	$13.00	$16.00	$19.00	$23.00	$28.00

Assorted in Sets.—⅛ to 2 (12), per set, $14.75; ¼ to 2 (8), $11.00. When above are wanted with handles add $1 per dozen, list.

Razor Blade Drawing Knives.

Inches.	6	7	8	9	10	12	14	16
Per dozen	$22.00	22.00	22.00	24.00	25.00	27.00	29.00	32.00

With Ebonized Handles, add 25 cents per dozen, net.

Regular Drawing Knives.

Inches.	6	7	8	9	10	12	14	16
Per dozen	$22.00	22.00	22.00	24.00	25.00	27.00	29.00	32.00

Carriage Makers' Drawing Knives.

Inches.	6	7	8	9	10	12
Per dozen	$25.00	$25.00	$25.00	$27.00	$28.00	$30.00

Wagon Makers' Drawing Knives.

Inches.	8	9	10	12.
Per dozen	$27.00	$29.00	$30.00	$32.00

Shingle Knives.

Inches.	10	12	14	16
Per dozen	$31.00	$35.00	$39.00	$43.00

Socket Firmer Chisels.—All Wood Handles.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$11.00	$11.00	$11.00	$12.00	$13.00	$13.00
Inches.	⅞	1	1⅛	1¼	1½	1¾	2
Per dozen	$14.00	$15.00	$16.00	$16.00	$17.00	$18.00	$19.00

Assorted in Sets.—⅛ to 2 (12), per set, $14.25; ¼ to 2 (8), $9.50; ⅛ to 1½ (9), $10.00; ¼ to 2 (6), $7.25.

Socket Firmer Chisels.—Leather Capped Handles.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$12.50	$12.50	$12.50	$13.50	$14.50	$14.50
Inches.	⅞	1	1⅛	1¼	1½	1¾	2
Per dozen	$15.50	$16.50	$18.00	$18.00	$19.00	$20.00	$21.00

Assorted in Sets.—⅛ to 2 (12), per set, $16.00; ¼ to 2 (8), $10.50; ⅛ to 1½ (9), $11.00; ¼ to 2 (6), $8.00. For Beveled Edge Socket Firmer Chisels add 50 cents per dozen, net; for Diamond Back Socket Firmer Chisels add 75 cents per dozen, net; for Sharpened and Honed Socket Firmer Chisels add 25 cents per dozen, net.

Socket Framing Chisels.

Inches.	¼	5/16	⅜	7/16	½	⅝	¾
Per dozen	$15.00	$15.00	$15.00	$16.00	$16.00	$17.00	$17.00
Inches.	⅞	1	1⅛	1¼	1½	1¾	2
Per dozen	$18.00	$18.00	$20.00	$20.00	$22.00	$24.00	$26.00

Assorted in Sets.—¼ to 2 (12), per set, $18.75; ¼ to 2 (9) $14.00; ¼ to 2 (6), $9.75.

Carpenters' Slicks.

Inches.	2¼	2½	3	3½	4
Per dozen	$40.00	$45.00	$50.00	$55.00	$65.00

Corner Chisels.

Inches.	½	⅝	¾	⅞	1	1⅛	1¼
Per dozen	$30.00	$30.00	$32.00	$34.00	$36.00	$38.00	$40.00

Socket Pocket Chisels (3¼-Inch Blade).

Inches.	¼	½	¾	1	1¼	1½	1¾	2
Per dozen	$11.00	12.00	13.00	15.00	16.00	17.00	18.00	19.00

Assorted in Sets.—¾ to 2 (6), per set, $7.00. For Beveled Edge add 50 cents per dozen, net.

Socket Firmer Coach Makers' Chisels.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$20.00	$20.00	$20.00	$21.00	$22.00	$22.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$25.00	$26.00	$28.00	$30.00	$32.00	$34.00

Assorted in Sets.—⅛ to 2 (12), per set, $25.00; ¼ to 2 (8), $17.00; ¼ to 2 (9), $18.75. For Beveled Edge add 75 cents per dozen, net.

Socket Firmer Millwrights' Chisels.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$20.00	$20.00	$20.00	$21.00	$22.00	$22.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$25.00	$26.00	$28.00	$30.00	$32.00	$34.00

Assorted in Sets.—⅛ to 2 (12), per set, $25.00; ¼ to 2 (8), $17.00.

Socket Firmer Paring Chisels.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$16.00	$16.00	$16.00	$17.00	$18.00	$18.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$21.00	$22.00	$24.00	$26.00	$28.00	$30.00

Assorted in Sets.—⅛ to 2 (12), per set, $21.00; ¼ to 2 (8), $14.25; ¼ to 2 (9), $15.75. For Beveled Edge add 75 cents per dozen, net.

Socket Firmer Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$7.00	$7.00	$7.50	$8.00	$8.50	$9.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$9.50	$10.00	$11.00	$12.00	$13.00	$14.00

Assorted in Sets.—⅛ to 2 (12), per set, $9.75; ¼ to 2 (8), $7.00.

Socket Paring Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$10.00	$10.00	$10.50	$11.00	$12.00	$13.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$14.00	$15.00	$16.50	$18.00	$19.50	$21.00

Assorted in Sets.—⅛ to 2 (12), per set, $14.25; ¼ to 2 (8), $9.75.

Socket Firmer Millwrights' Gouges.

Inches.	⅛	¼	⅜	½	⅝	¾
Per dozen	$15.00	$15.00	$15.00	$16.00	$17.00	$18.00
Inches.	⅞	1	1¼	1½	1¾	2
Per dozen	$19.00	$20.00	$22.00	$24.00	$26.00	$28.00

Assorted in Sets.—⅛ to 2 (12), per set, $20.00; ¼ to 2 (8), $13.25; ⅛ to 1½ (9), $13.50.

Rope.—The market continues in about the same condition as during the past two weeks. Demand is encouraging, as the present volume of business is regarded as foreshadowing an increased demand when the season is more advanced. The market continues firm at former prices. Quotations are as follows: Pure Manila, 11¾ to 12 cents; Pure Sisal, 10 cents; No. 2 quality Sisal, 8 to 8¼ cents per pound.

Window Glass.—At an executive meeting of the Manufacturers' and Jobbers' Window Glass Association held last week minimum prices were reaffirmed as follows, based on the manufacturers' list: First three brackets, single strength, 90 and 10 and 5 per cent. discount; larger sizes of single and double strength, 90 and 10 per cent. discount. There is a disposition on the part of several manufacturers against closing their plants on May 30. Demand is represented by manufacturers as being good. Local quotations are as follows: First two brackets, single, 90 to 90 and 15 per cent. discount; larger sizes, both single and double strength, 90 to 90 and 10 per cent. discount from jobbers' list.

Oil.—*Linseed Oil.*—Current demand continues moderate, while specifications on contract orders are not coming in very freely. Paint manufacturers complain that the distribution of their products is below what is usually expected at this season. There is nothing in these conditions that is likely to effect an increase in business when the trade actually need the goods. Crushers show no disposition to vary from regular prices to stimulate buying. The market is firm at former prices. New York quotations are as follows: City Raw, 47 to 48 cents per gallon, according to quantity; State and Western Raw, 45 cents, in any quantity.

EDGAR A. WILHELMI COMPANY.

EDGAR A. WILHELMI COMPANY, 93 Reade street, New York, is the name of a concern newly organized in its present form, but the constituent members of which are men experienced in the export trade with Europe, Africa, South America and the Orient. Wilhelmi & Co. were formerly at 116 Broad street, and previous to that some of their members had organized the New York Export & Import Company. The purpose of the new company is to cover foreign countries with salesmen who will especially push certain lines in American made machinery and general merchandise specialties, for which the company has special contracts. The entire building at 93 Reade street, containing five floors and two basements, has been taken and fitted up, complete samples of all the goods the particular manufacturers referred to make being displayed for examination, the ample room also enabling the company to carry stocks.

One salesman will look after China, Japan and the Philippines, one is assigned to India and Straits Settlements, another to South America, one to South Africa, one to Australia and another to European territory. There is also a domestic department, kept distinct, in which will be conducted a selling business similar in character in the United States. Walter Marvin, secretary of this organization, was also associated with Mr. Wilhelmi in the old company and the New York Export & Import Company.

In a suit which is being brought by Yale & Towne Mfg. Company to prevent the manufacture and sale of a certain line of padlocks made by E. T. Fraim, which are alleged to be in imitation of padlocks made by the company, a motion of the complainants for a preliminary injunction was argued in January last. A decision by Judge Thomas was rendered March 27 denying the motion, and the case will accordingly come up for trial in due course.

AMONG THE HARDWARE TRADE.

S. Waters has disposed of his Hardware, Stove, Implement, Paint and Sporting Goods business in Goldendale, Wash., to W. A. McKenzie & Son, who continue at the old stand.

Corr, Johnson & Lawless have bought the Hardware, Stove and Paint business formerly conducted by Martin Peterson & Sons, St. Peter, Minn. A number of improvements have been effected in the store.

Clarke & Eaton Company, Heavy Hardware and Implement merchant at Elberton, Wash., has opened a branch store at Lacrosse, Wash.

W. R. Johnson has succeeded Johnson, Hunt & Co. in the Hardware, Stove and Implement business at Delta, Col.

Willis Snow has bought the Hardware, Stove, Paint and Implement store of J. A. Brewster, Freeport, Maine.

Groetsch Bros. have purchased the Moskop Hardware business at Green Isle, Minn.

Woodward & Co., Lewis, Iowa, are successors to Savage & Trumbull in the Hardware, Stove, Sporting Goods, Wagon and Harness business.

A. L. Minor has purchased the Hardware and Stove business formerly carried on by F. W. Knott, Prairie Hill, Mo.

Rasel & King have bought out the Claysville Hardware Company, Claysville, Pa., and will continue at the old stand, handling Hardware, Implements, Buggies, Paints, Varnishes, &c.; also plumbing and steam and hot water heating.

Butts, Danforth & Co., Sodus, N. Y., have purchased the Harness and Carriage business of Hiram M. Barnes, which they will continue in connection with their general Hardware establishment.

Virginia-Tennessee Hardware Company, Bristol, Tenn., wholesale and retail, has succeeded to the business of the Barker Hardware Company.

Q. A. Sloane & Son have succeeded Q. A. Sloane in the Hardware, Stove, Sporting Goods and Harness business at McGregor, Iowa.

J. W. Cherry has bought the Hardware and grocery business of V. A. Johnson at Warwick, O. T.

The Lawrence Hardware Company, Sussex, N. J., has been incorporated with a capital of $50,000, $17,000 paid in, succeeding F. W. & G. S. Lawrence. S. F. Quince and F. B. Whittle, former employees of the firm, with the Messrs. Lawrence, are the incorporators. The company is intending to open a branch Hardware and plumbing establishment at Butler, N. J.

THE GARVER HARDWARE COMPANY, Des Moines, Iowa, has been awarded the contract for furnishing Trimming Hardware on 16 new buildings to be erected at the army post at Fort Des Moines this year. The company also has the contract for the Trimming Hardware for the new Polk County court house.

THE PECK EDGE TOOL COMPANY, Cohoes, N. Y., has been reorganized with the following officers: Joseph A. Powers of Troy, president; Thos. O'Connor of Waterford, secretary; D. J. Halpin of Waterford, treasurer and general manager; Albert W. Powers of Troy, director. It is stated that ample capital has been provided to manufacture and furnish promptly Edge Tools of the best quality.

CONTENTS.

PAGE.
The Plant of the Ridgway Machine Tool Company. Illus..1065
John D. Hibbard and the Closed Shop.....1072
The Chicago Metal Trades Superintendents' and Foremen's Club.....1073
The Ridgway Boring and Turning Mill. Illustrated.....1074
A New Air Hardening Tool Steel.....1077
The Production of Rails in 1904.....1077
A Multiple Buffalo Forge for the University of Illinois. Ill.1078
Pacific Coast Trade Conditions.....1078
The Colorado Fuel Financial Arrangement.....1079
The Grant Duplex Vertical Tapping Machine. Illustrated..1079
The Gayley Dry Air Blast.....1080
Customs Developments.....1081
The Ferro-Alloy Appeal.....1081
The Indiana Railroad Commission's Powers.....1082
A New Sturtevant Generating Set. Illustrated.....1082
Doble Tangential Water Wheels.....1083
The New York Central Bridge Contract.....1083
The Williams Magnetic Clutch. Illustrated.....1083
The Woodward Iron Company.....1084
Railway Engineering and Maintenance of Way Convention..1085
Drawback on Mining Machinery and Supplies.....1085
The National Metal Trades Association.....1086
Lake Iron Ore Matters.....1091
Allis-Chalmers General Offices Go to Milwaukee.....1091
Editorial:
The Tariff and Revenue Situation.....1092
The Minimum Wage Question in Great Britain.....1092
Employers' Certificates.....1093
New Era for the National Metal Trades Association...1093
Municipal Burdens on Local Industries.....1093
A Permanent Factor of Expense.....1094
Correspondence.....1094
Personal.....1094
Progress in Opposing Evils 'n Trades Unionism.....1095
The Interstate Iron & Steel Company.....1096
The Otis Elevator Company.....1096
The St. Louis Coal Testing Plant.....1096
Foundry Costs.....1097
The Ronay Ore Briquetting Process.....1098
Obituary.....1098
The Buffalo Foundrymen's Association.....1098
News of the Works:
Iron and Steel.....1099
General Machinery.....1099
Power Plant Equipment.....1100
Foundries.....1100
Fires.....1100
Bridges and Buildings.....1100
Hardware.....1100
Miscellaneous.....1100
Trade Publications.....1101
Labor Notes.....1101
The Iron and Metal Trades:
A Comparison of Prices.....1102
Chicago.....1102
Philadelphia.....1104
Birmingham.....1105
Pittsburgh.....1106
Cleveland.....1107
Cincinnati.....1108
Labor Notes.....1108
Edgar Thomson Furnace Record.....1108
Iron and Industrial Stocks.....1109
The Cook County Court House Electric Light Plant.....1109
Notes from Great Britain.....1110
Metal Market.....1111
The Youngstown Iron, Sheet & Tube Company.....1111
New York Pig Iron Warrant Market.....1111
Passaic Steel Company.....1111
The Machinery Trade:
The New York Machinery Market.....1112
New England Machinery Market.....1114
Cleveland Machinery Market.....1114
Philadelphia Machinery Market.....1115
Cincinnati Machinery Market.....1115
Standard Size Price Sheets Desired.....1116
Government Purchases.....1116
New York.....1116
The Sloss-Sheffield Steel & Iron Company.....1117
Wooden Stave Pipe.....1117
Hardware:
Condition of Trade.....1118
Notes on Prices.....1119
Edgar A. Wilhelmi Company.....1121
Among the Hardware Trade.....1121
Requests for Catalogues, &c.....1122
Parcels Post Agitation.....1123
V. P. Humason's Removal.....1123
Trade Winning Methods. Illustrated.....1124
Items About Lawn Mowers.....1126
Office Appliance and Business Systems Show in Chicago.1127
Correspondence.....1127
Churchill-Hemenway Company's Store. Illustrated....1128
Hardware Demands in Asia Minor.....1130
Keystone Lanterns.....1130
British Letter.....1131
The William H. Haskell Mfg. Company.....1131
Price-Lists, Circulars, &c.....1131
Cycle Ball Bearing Steel Frame Grindstone No. 300. Ill.1132
Ideal Lawn Mower Grinder. Illustrated.....1132
Combination Vise, Anvil and Drill. Illustrated.....1132
Shipping Pail and Tub with Sealed Cover. Illustrated.1133
Premier and American Lemon Squeezers. Illustrated..1133
Nitro Special Shotgun. Illustrated.....1134
New Kraut Cutters. Illustrated.....1134
Yacht Saluting Gun. Illustrated.....1134
Bench Drill Presses. Illustrated.....1135
Johnson Trayless Fishing Tackle Box. Illustrated...1135
Current Hardware Prices.....1136

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS *for catalogues, price-lists, quotations &c., have been received from the following houses, and are referred to the manufacturers.*

FROM GEORGE C. ASBY, Union Center, Wis., who has bought the Hardware, Stove, Implement, Wagon and Buggy business formerly conducted by D. Miller.

FROM E. J. SWARTZ & SON, Wakarusa, Ind., who have disposed of the Hardware part of their business and will hereafter devote themselves to the sale of Agricultural Implements.

FROM SHEELEY & EVANS, Hopkins, Mo., successors to Sheeley, Evans & Oxley in the Hardware, Stove, Implement, Sporting Goods and furniture business.

FROM A. M. DUSTER & Co., Farwell, Neb., who have succeeded James Land & Co. in Hardware, Stoves and Implements.

FROM G. P. HILL, Mt. Vernon, Texas, successor to Hill & Morris in the Hardware, Wagon and Buggy and furniture business.

FROM HUELLE & HUSEMAN, Yorktown, Iowa, who have bought out W. M. Seibert in the Hardware, Stove, Paint and Sporting Goods business.

FROM E. S. RULE, Sharon, Kan., successor to Rule & McCuen in the Hardware, Stove, Implement, Paint, lumber and building material business.

FROM OLDHAM & RANAHAN COMPANY, Southbridge, Mass., which has recently been organized to carry on the Hardware, Stove, Implement, Paint, Plumbing and Sheet Metal business.

FROM W. A. KING, who has disposed of his business at Glenford, Ohio, to G. E. Ice and T. A. Starkey and has removed to Thornville, where he has re-entered the Hardware, Stove, Implement and Paint line.

FROM H. H. CAMPBELL, Mt. Sterling, Ohio, who has moved to new quarters, where his facilities for doing business are much improved.

FROM E. H. COLEMAN, Wellsville, N. Y., who has just opened up in the general Hardware business.

FROM G. H. WESTING COMPANY, Indianapolis, Ind., which has been organized with a capital stock of $15,000 and succeeds to the Bicycle business formerly conducted by Mr. Westing, to which a complete line of Sporting and Athletic Goods will be added.

FROM WM. SCRIBNER, Renfrow, O. T., who has succeeded Scribner Bros. in the Hardware, Stove, Paint, Implement and Sporting Goods business.

FROM FOX'S HOUSE FURNISHING STORE, Yonkers, N. Y., which has during the past few months added a full line of Builders' Hardware and Mechanics' Tools to its former extensive assortment of house furnishings.

FROM OKLAHOMA CITY HARDWARE COMPANY, Oklahoma City, O. T., which is about to issue a general Hardware catalogue of more than 1000 pages, and will be pleased to consider any proposition manufacturers of goods in the Hardware and related lines may have to offer.

FROM ROCK ISLAND HARDWARE COMPANY, which has succeeded J. W. Stewart in the wholesale Hardware and iron business at Rock Island, Ill.

IN ADDITION to the firms already represented by him Benjamin S. Alder, 37 Warren street, New York, has been appointed New York and export representative of Wausau Sandpaper Company, Flint and Emery Paper and Emery Cloth; Pittsburgh Shovel Company, full line of Shovels, Spades and Scoops; Blacklock Foundry, common Sad Irons, and Hawkeye Wrench Company, Hawkeye Wrenches.

Parcels Post Agitation.

WASHINGTON, D. C., March 28, 1905.

THE methods to which the advocates of a domestic parcels post are willing to resort to give the public the impression that they have the support of influential manufacturers and merchants throughout the country are clearly indicated in a statement published a few days ago in a New York daily paper and apparently inspired by the Postal Progress League. This publication contained the assertion that a large number of merchants, manufacturers, publishers and others were taking an active part in the campaign to secure the authorization of a parcels post, and among others A. G. Spalding & Bros., the well-known sporting goods house, was mentioned. It is significant that more than 18 months ago this firm emphatically repudiated all the parcels post schemes in a letter to Secretary Corey of the National Retail Hardware Association, through whose courtesy the correspondent of *The Iron Age* is able to quote the following extract:

Some time since our attention was brought to the Postal Progress League through a personal friend of our house, and in such a manner that we were of the opinion that a deal of this kind would inure to the best interests of our customers. Subsequent light on the matter has convinced us that we did not investigate as thoroughly as we should have done.

Our interest first, last and all the time is with the retail dealers of this country, and we have, therefore, decided to withdraw our support from the Postal Progress League from and after this date. We feel under obligation to the gentlemen who have written us with reference to the matter. We certainly should have taken no action which would in any way affect the trade of the retail dealers had we been better posted at the start.

Mr. Corey was at some pains at the time to correct the misapprehension with regard to the position of the Messrs. Spalding and the attention of the Postal Progress League was drawn to the matter. Nevertheless the name of this well-known firm continues to be used among the "advocates of a parcels post."

In the same list with A. G. Spalding & Bros. was mentioned the big dry goods jobbing house of H. B. Claflin Company. John C. Eames, second vice-president and manager of this company, has denied any connection with the parcels post movement and makes the following emphatic statement of the position of his firm:

A parcels post would destroy the country retailer. It is not to the interest of the citizens of this country that rural districts be supplied with the necessities and luxuries of life through a few large establishments in the great centers.

Even could the inhabitants of small towns and villages be supplied with merchandise by a few gigantic concerns with better advantage to themselves than through the merchant in the country town I should still doubt the wisdom of establishing a parcels post. The store in the small town or village is an advantage to the country at large and the country merchant is a valuable factor in the life of the nation.

As a matter of fact, however, the country retailer supplies the wants of his trade as cheaply and more satisfactorily than does the immense establishment. His goods are better value for the money and are of a higher intrinsic character. They may not be quite as "fancy" as those supplied from the larger centers, but they will prove more durable.

Canada's Experience with Parcels Post.

Official advices received here confirm the press reports with regard to the large deficit that has been developed in the Canadian parcels post, which has been so frequently referred to as a model for the Government of the United States. Sir William Mulock, the Postmaster-General of Canada, in a debate in the Dominion Parliament, has stated that the branch of the postal service engaged in carrying papers and parcels now shows a large deficit. He has admitted that the taxpayers of the Dominion have no means of knowing how much of the shortage is due to the carrying of merchandise through the mails at less than cost, although he concedes that the public is entitled to a separate report on this feature of the service.

The Canadian press is now demanding that the parcels post rate be increased until the service shall cease to be a burden upon the general taxpayer, and the fact is emphasized that at present the small merchants throughout the Dominion are being heavily taxed to meet a deficit created by the Governmental handling of large quantities of freight and express matter emanating from a few retail mail order houses established in Canada during the past half dozen years.

Even England Reports a Loss.

Conditions in Canada with respect to the revenue producing power of the parcels post service appear to be very similar to those now prevailing in Europe and especially in Great Britain. Ex-Representative Loud of California, who has been selected as a delegate from the United States to the Universal Postal Congress soon to be held in Rome, recently made an interesting statement with regard to the revenues of the leading foreign countries that have adopted the parcels post, in the course of which he said:

Those who favor parcels post say that England, France, Germany and other countries have the system, and that it works well. That is true, but the conditions, geographically and socially, are wholly different. In those countries the dense population is concentrated and the distances are not great. These conditions might make the system practicable and profitable there, while our conditions would make it impracticable and unprofitable here.

The officials in the countries named do not know whether the system is profitable or not. I have been credibly informed that, as far as England is concerned (and that is the only country that attempted to find the cost), so long as a separate account was kept of the service, it was found to be conducted at a considerable loss, and the only way in which it could be held to be a great success was to quit bookkeeping. A Government that has the taxing power can do this, but an individual that has to furnish the resources could not maintain his credit long under this method.

The condition of the retail merchant in Canada is by no means as serious as would be that of the merchants in the United States should a parcels post be adopted here, for the reason that the retail mail order business in the Dominion is in its infancy. If, therefore, the retailers of the United States, with the warning of their Canadian brethren before them, do not bring all possible pressure to bear upon their Senators and Representatives during the Congressional recess they will be able to blame no one but themselves should any of the various schemes of the Postal Progress League be enacted into law next winter.

V. P. HUMASON'S REMOVAL.

V. P. HUMASON, formerly at 80 Chambers street, New York, has moved to the Franklin Building, 9-15 Murray street, where a full line of samples will be displayed of the products of the various concerns represented by him. Mr. Humason is vice-president of the Chapin-Stephens Company, Pine Meadow, Conn., manufacturer of Rules, Planes, Levels, Gauges, &c., and treasurer of the Humason & Beckley Mfg. Company, New Britain, Conn. He also represents the Wm. Rogers Mfg. Company, manufacturer of Silver Plated Table Flat Ware, and the West Silver Company, manufacturer of Silver Plated Table Hollow Ware. A stock of the Chapin-Stephens Company's line and of Silver Ware will be carried. The export department of the business will be under the direct supervision of Mr. Humason's son, John E. Humason.

THE large new building of W. J. Holliday & Co., Indianapolis, Ind., wholesalers of Heavy Hardware, ground for which was broken about January 1, is now well under way. The building is to be five stories with basement, covering an area 136 x 200 feet. It is arranged especially for carrying Iron, Steel and Heavy Hardware and combines the best features of modern warehouses. A private switch, 300 feet long, will serve the building, which will be so arranged that five cars can be loaded at one time. A complete automatic sprinkler system will be installed, as will also power and tools for punching, shearing and other purposes, which will be furnished by the Rock River Machine Company, Janesville, Wis.

Edward E. Coleman has withdrawn from the Hardware firm of Matlack, Coleman & Co., 203 Market street, Philadelphia, and the business will be continued by Paul Matlack and Augustus B. Kern under the style of Matlack, Kern & Co.

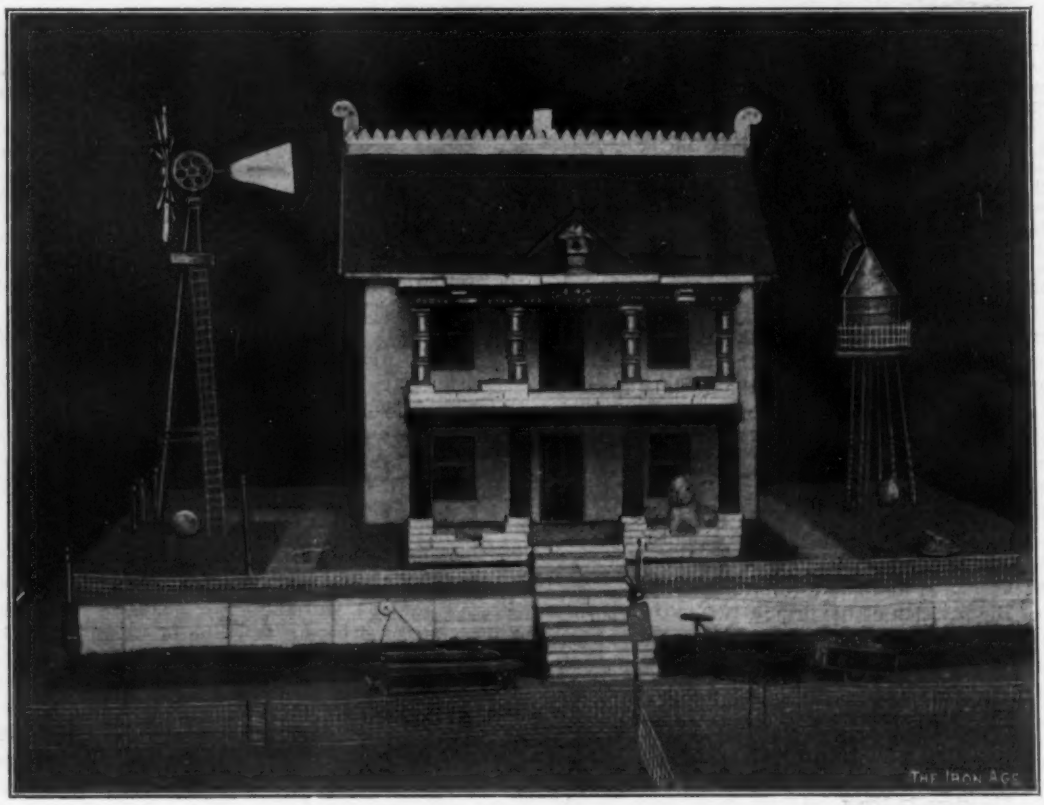
Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

HARDWARE HOMESTEAD.

DUNCAN & VAWTER, Franklin, Ind., are to be credited with the unique and interesting show window display reproduced herewith. The exhibit was designed and put together by J. L. Duncan of the firm. It was christened "The Old Kentucky Home." In the construction of the home a box frame was first made, in which openings for doors and windows were cut. Glazed tile, 1½ x 3 inches, were fastened to the frame with flour paste. The doors were of oak tanned sole leather, with openings cut out for glass. They were equipped with Locks and Bolts. The glass in windows was secured with small wooden bars across the centers of the windows. The roof was of block sole leather and was provided with a small gutter and down spout. The veranda floors, both upper and lower, were of 3 x 6 inch glazed tile. The columns of the first floor veranda were of coil leather washers set on tile. The columns above were of spools of bright Wire, also set on tile. The veranda front was finished with carpenters' lead pencils and Dog Collars. The gable in front was a Stanley "Odd Jobs," supporting a 2-foot Rule extended. The wind mill tower consisted of four brass lined Rules set in ½-inch Blank Nuts. Girts were Scissors Sharpeners. The ladder was of Galvanized Hardware Cloth. A 3-inch Pump Leather constituted the platform. A Dover Egg Beater supplied the gear for wind mill. A small block with pearl handled Pocket Knives furnished sails. The elevated tank tower was upheld by four ½-inch Augers, with glass water gauge for down pipe. Railing around tank was of Galvanized Hardware Cloth, with Dog Collar for band around same. A large Machine Oiler represented the tank. Cotton cord was the Hose, a Peg Awl forming the nozzle. The fence posts were of Window Spring Bolts and Hardware Cloth cut to proper widths supplied the fence. Glazed tile was used for steps and walks around the house. Ground cork represented the soil. The roadway was of fire clay. The rails for trolley line were Oil Cloth Binding, and Nails formed the cross ties. Auger Bits served as trolley poles, the cross arms being Nickel Plated Screws. Copper Wire furnished the overhead trolley wire, to which was fitted a small trolley wheel. Gimlet with brass jack chain constituted the hitching post.



Hardware Homestead.

The exhibit attracted much attention while it occupied the window and was the subject of considerable comment.

STOVE ROOM SEPARATE?

A HARDWARE merchant in New York State submits the following inquiry as to whether or not it is advisable to have Stove showroom separate from the main salesroom:

In a small country town (1000 inhabitants) is it advisable in building a Hardware store to equip a Stove showroom separate from the main salesroom of the store, or would it be better to show Stoves in the same room with general Hardware and House Furnishing Goods? What dimensions would be best adapted for the showing of 15 or 20 samples of Ranges and Heaters?

We shall be pleased to have any advices or suggestions which our readers may have to offer for the guidance of our correspondent.

POINTERS FOR HARDWAREMEN.

BY "ON THE ROAD."

A "Model Kitchen" is a scheme which may be made a trade winner. One of my customers recently set apart a portion of his second floor, on which Stoves and other House Furnishing Goods are carried, for this purpose. The space measured 10 x 16 feet, around which he built a plain board partition, provision being made for windows, &c. The room thus devised was equipped with a fine Steel Range, Kitchen Furniture and a full assortment of kitchen requisites. Adjoining this room was another, considerably smaller in dimensions, which served as a pantry. The walls of both rooms were finished smooth in imitation of plaster or tile. The floor was covered with Oilcloth, but this would be unnecessary where the boards were good. With the "Model Kitchen" completed the merchant invited the public, particularly the fair sex, to come and inspect it, an invitation which was accepted by many with financial results gratifying to the proprietor of the establishment.

"Model Kitchen"

A certain merchant disposes of his odds and ends through the medium of a large table, suspended above which is a sign to the following effect:

Bargain Table

Everything on this table is reduced in price on condition that you pick the articles as they stand and wrap them up yourself.

At one end of the table is wrapping paper and twine. This table is a great favorite, especially with bargain seekers, and a good deal of odd merchandise is thus disposed of.

A Western merchant takes particular pains in opening his letters, so that no rough edges are in evidence. This is not done to kill time by any means, nor because he has nothing else to do. All his envelopes, after the contents have been extracted, are laid one side, and when they have accumulated to several hundred in number the painstaking merchant fills up the envelopes with circulars, leaflets, &c., which, by the way, don't cost him anything, as they are furnished by manufacturers. The envelopes are then placed in a bag, which is given to a man, who is instructed to distribute the envelopes and their contents over the country roads of the territory covered by the merchant, one being dropped here and there until the supply is exhausted. The envelopes look so much like unopened letters that they are all pretty sure to be picked up by curious passers by.

Curious People

The promotion of rivalry or contests among clerks develops special interest in the business on their part and thus contributes to its growth and success. Some proprietors offer small cash prizes for unique and original matter for advertising purposes, newspaper, circular, &c. Ideas for arranging and decorating windows and store interiors may be obtained in the same way. Some merchants have found it helpful and profitable to offer prizes for useful and practical suggestions in regard to the conduct of the business.

Cash Prizes for Clerks

One of my customers always sends a present to newly married couples if they buy a certain amount of their household requirements in his establishment. In selecting the gift he tries to be as generous as he can and very often he finds that the happy couples thus honored are very appreciative and seem to feel that he has given more than is perhaps justified by the volume of their purchases. He thus succeeds in securing many of them as regular customers.

Encouraging Matrimony

For some days prior to the visit of a circus an enterprising Hardwareman through the medium of the local paper and circulars advised the public that he would give a ticket entitling the holder to a reserved seat at the show to every purchaser of $10 worth of goods at his store. A good many availed themselves of the opportunity of obtaining circus tickets in this way.

Circus Tickets

Another trade seeking merchant has an arrangement with a livery man in accordance with which those of his patrons who purchase $20 worth of goods in a month are entitled to the use of a double seater for an afternoon. A second merchant makes the amount $25 to secure a ride.

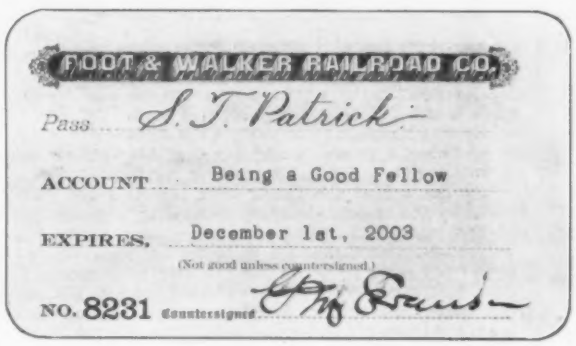
A Drive in the Country

One of my customers has special sales every Saturday afternoon, during which his patrons are entertained with good music by a small but select orchestra. A programme of the music is issued, on which are also listed the special lines on which a drive is being made.

Musical Bargains

PASS FOR GOOD FELLOWS.

EVENSON BROS., St. Peter, Minn., of which firm Geo. M. Evenson, vice-president of the Minnesota Retail Hardware Association, is a member, recently distributed passes, the face of one of which is reproduced herewith. These passes were sent out through the mails and were unaccompanied by any other matter, so that there was nothing to detract from the force and


FOOT & WALKER RAILROAD CO.
Pass S. T. Patrick
ACCOUNT Being a Good Fellow
EXPIRES, December 1st, 2003
(Not good unless countersigned)
NO. 8231 Countersigned

Pass for Good Fellows.

uniqueness of the ad. Some care was exercised in the mailing to see that they were sent only to those whom it was thought would appreciate the joke. Several of the country friends of the firm in acknowledging the receipt of the pass took occasion to refer to the "Foot & Walker Railroad Company" as a good, safe road to travel, had been using it for years, had never heard of an accident on the system, &c.

The back of the pass contains the following

CONDITIONS.

Transferable only under the following conditions:

The bearer agrees that St. Peter is the best trading point in southern Minnesota.

Also that Evenson Bros., the live Hardwaremen, are the proper people to patronize, when one wants good goods at honest, fair, reasonable prices.

By application at the General Manager's office you can obtain permission to take all your friends with you —when traveling on this route.

Important to Remember.—You can always buy the same article for less money, or a better article for the same money, at Evenson Bros.' Hardware Store, St. Peter.

The firm advises us that the pass has proven an excellent advertisement in making people talk about the house. While an ad. of this sort has no direct value as a seller of goods, it provides something novel for public gossip and keeps the firm in the limelight, and to this extent is to be regarded as possessing a certain claim as a business developer. That the passes were not ruthlessly cast aside or destroyed was demonstrated several days after they were distributed. An entertainment conducted by a well-known local organization was being

given, and the ticket collector at the door of the hall was kept busy turning down the passes which were jestingly presented in place of the legitimate cardboards.

MERCHANTS' ASSOCIATIONS.

A LOCAL merchants' association in an Illinois city recently issued a new customers' rating book for circulation among the members. Simultaneously with its appearance the following frank and straightforward announcement was published in the local newspapers with a view to making the public acquainted with the objects and intention of the association and to disarm suspicion as to its purposes.

Newspaper Announcement

The objects and workings of the —— Retail Merchants' Association seem to be very much misunderstood by some of the people of —— and vicinity.

The objects as set forth in the constitution are as follows:

(a). To establish, foster and maintain cordial and friendly relations between merchants in retail trade in the city of —— and vicinity.

(b). To improve trade relations and methods by pointing out and endeavoring to correct trade abuses.

(c). To gather information for the purpose of establishing a bureau for the rating of customers, by accurately compiling and publishing the credit rating of residents of the city of —— and vicinity tributary thereto, from definite information gathered from its members and other reliable sources, and thus securing the prompt payment and collection of accounts outstanding.

One of the main objects advanced when organizing and which is still a leading feature and always shall be was the advantage to be derived first for the customer and last for the merchant. There can be no greater injustice to a man than to refuse him credit, when in need, if he is justly entitled to it.

How is a merchant to know when a man is worthy of credit? In answer would say that his only means of knowing is to learn his business methods.

By the use of the rating book compiled and published by the association every member is in possession of the manner in which every customer meets his obligations. Who, then, is to blame for your rating? If you pay cash, promptly, slow or beat your accounts, your merchant will without a doubt report you so, thus being just to you, himself and others. The idea is abroad that only those who beat their bills are rated. This is erroneous, as every one, the merchants as well, is rated. The ratings are classified as follows:

0. Pays cash.
1. Perfectly good.
2. Prompt pay.
3. Slow, but safe to credit.
4. Pays, but risky.
5. Honest, but not safe to credit.
6. Demand cash.

From the above you will readily see that justice is shown to all. Nothing can be fairer than this, as you are classified just as you transacted business, showing the merchant whether you are worthy or unworthy of credit, and he governs his acts accordingly.

By using this system the merchant is enabled to sell on a closer margin, which is a saving to you and himself, as his loss is less. His goods must be paid for when the bills are due. In many cases failures have occurred because the customer persisted in carrying a balance. If you are employed by the month you expect to be paid monthly and not quarterly. Just so with the merchant. He expects his pay from you monthly, and not every three, six or twelve months, or possibly never.

Who is the leader in public improvements, churches, schools, &c.? Who is it that you apply to for credit when adversity overtakes you? Is it the mail order house or the home merchant?

Consider these facts carefully, consult your better judgment and home merchant. Spend your cash where it will be used to promote home industry, maintain the home schools and churches, and you will not only be greatly benefited, but will also be a blessing to the community.

Horse Feed Tickets

A merchants' association in an Iowa city issues free horse feed tickets to farmers who do their trading in that city. The purchase of a certain amount of goods entitles the farmer to a ticket which is good for a team feed at any time.

Merchants Offer to Pay Car Fare

Another association in an Indiana center publishes a list of villages and towns in its vicinity from which it will pay round trip fares, provided the customer makes purchases amounting to $15. This association comprises 21 merchants representing practically all lines of trade.

ITEMS ABOUT LAWN MOWERS.

COLDWELL LAWN MOWER COMPANY, Newburgh, N. Y., is making a new line of Mowers especially adapted to the English trade. The company's new Roller Mower is referred to as quite equal in quality of work to the best English Mowers, while far surpassing them in strength, simplicity, lightness of draft and variety of work. Its desirability for golf links or other use where quality is the first consideration is also mentioned. The company is also placing on the market this year a new Gasoline Motor Mower, in two sizes, 35 and 40 inch. The engine used in these machines is one of the simplest and best made, it has changeable speed and is easily managed. It sells at a price much less than the company's Steam Motor Mower and is about one-half the weight. The company, which refers to orders this year as showing an increase of about 20 per cent. over last year, has opened its own office in London, and E. C. Ross, treasurer, has taken up his permanent residence there, and will hereafter manage the foreign business from his office, 13 and 15 Wilson street.

DILLE & MCGUIRE MFG. COMPANY, Richmond, Ind., notes a growing desire, especially among the retail trade, to have its good Mowers under factory brands, and the company has been for the past three years and is still supplying a few jobbers, some at their own request, with factory branded machines, since which time the trade of these jobbers has more than doubled. The company feels that the sooner this idea becomes generally prevalent the more satisfactory it will be for all interested.

SUPPLEE HARDWARE COMPANY, Philadelphia, is intending to put on the market for the season of 1905 something new in the way of a Horse Mower Grass Catcher, details concerning which are not yet announced. The company states that within the past five years it has perfected several lines of Lawn Mowers that are practically self sharpening, a Screw Driver being the only tool needed to keep them sharp. A little attention given to the adjusting screws of the lower knife will keep the Mower in perfect cutting condition for several years, or as many years as it takes to wear out the lower knife. The Mowers to which the above remarks apply are the Pennsylvania Jr. Ball Bearing, the Great American Ball Bearing and the New Departure, the only expense of keeping which in order is the occasional renewal of the 75-cent blade for the stationary knife, which may not occur in some cases for many years. This feature having proved successful with its Hand Mowers the company has adopted it on its line of Horse Mowers. While it adds slightly to the cost of the machines the company refers to it as certainly warranted by the results produced and reimbursing the buyer in obviating annual repairs.

THE GRANITE STATE MOWING MACHINE COMPANY, Hinsdale, N. H., has put on the market a new Mower to meet the demand for a 10-inch wheel ball bearing machine at a low price. The machine is referred to as well made in every particular and offered at a very close price. This company succeeded something like a year and a half ago the old Newhall & Stebbins concern, which had made the Granite State Lawn Mowers for a period of 32 years. Since taking over the business the company has installed new machinery and electric light and steam heating plants, and has been pushing the sale of its products throughout the country in an aggressive way, so that within the next few months the company expects to have its products represented in practically every State. Its predecessor confined its business to the

retail trade and low prices were made. These prices the Granite State Company does not consider it practicable to disturb, although sales are now being made to the jobbing trade as well at prices which yield the jobbers a margin of profit.

THE PHILADELPHIA LAWN MOWER COMPANY, Philadelphia, Pa., carrying out its purpose of doing away with three-knife machines for low grade goods, is offering the Dewey Mower in place of the Drexel, the latter having three blades and the Dewey four. Otherwise the two machines are identical. In the four-bladed class the company is also making the All Day Mower, with 10-inch wheel. Prices on both of these machines have been slightly advanced, but notwithstanding the demand has been large and in excess of last season. The company also reports a satisfactory demand for its Genuine Philadelphia Mowers, of which a very large and complete assortment is offered.

MAST, FOOS & CO., Springfield, Ohio, have added two new styles of ball bearing Lawn Mowers to the Buckeye line for the coming season. These machines will be known as the Buckeye Standard and Royal Buckeye. They are made in 14, 16, 18 and 20 inch sizes, with 10-inch wheels and 6-inch reel, with four knives. The company reports a large demand for its Mowers, and is looking forward to an excellent season in this line.

OFFICE APPLIANCE AND BUSINESS SYSTEMS SHOW IN CHICAGO.

THE interest taken in modern methods and labor saving systems for office and factory was strikingly displayed in the phenomenally large attendance at the first annual show of office appliances and business systems held at the Coliseum in Chicago March 15 to 22. About 125 firms exhibited, their displays ranging from lead pencils and carbon papers to telephones, barrel trucks and printing presses. Practically every known device for saving time and facilitating system in office and factory was represented. For instance, there were seven different adding machines, three makes of addressing machines, a half dozen office and factory telephone systems, seven time recorders, four makes of time stamps, six makes of typewriters, four duplicating machines, six filing cabinet systems, eleven makes of loose leaf ledgers, and a long line of such devices as autographic registers, automatic cashiers, bookcases, business systems, cash counters, store, office and factory conveying systems, catalogue cabinets, desks, time locks, electrotype cabinets, envelope sealing machines, fountain pens, fire extinguishers, bookkeepers' books, letter filing systems, office and factory lighting systems, office magazines, graphophones, metaphones, mimeographs, office furniture and specialties, pencil sharpeners, scales, check protectors, safes, shorthand systems, stationery, telautographs, telephone supplies, time stamps, typewriter supplies, watchmen's clocks, water coolers, &c.

In addition to the set exhibits, a number of contests attracted great attention, among them being rapid typewriting, blindfold typewriting, 12-hour endurance contest on typewriter, adding machine contests, and various other contests of speed, skill, accuracy and endurance in the use of office devices. Prizes, medals and cups, were awarded and the names of the winners were published in the convention daily paper and in the city papers. Addresses by recognized authorities were made each afternoon and evening on topics of interest to office managers and employees.

The idea of holding such an exhibition was first put into practical form by H. A. Cochrane and F. W. Payne, and their initial show was held last December at Madison Square Garden, New York. It was only a three days' affair, and was really over before the public realized its importance. The Chicago show, extending a full week, was so pronounced a success that it has been decided to make it a bi-city semiannual event, a show being held in Madison Square Garden, New York, every autumn, and one in the Coliseum, Chicago, every spring.

Correspondence.

Galvanized Cut Nails.

To the Editor: I have been very much interested in what has been said in the columns of *The Iron Age* on the subject of Iron and Steel Nails. While I am not qualified to take sides in the discussion, I have a suggestion that will, if followed, make the question of whether the Nails used are called Iron or Steel of secondary importance, so far as their use for outdoor work in concerned.

It is my experience from years of observation as a builder that the Nails of our day, whether they be branded Iron or Steel, fail to give the service required. My suggestion applies particularly to the Nails used in laying shingles. If shingles are laid with ordinary Black Nails, whether they be Cut Nails or Wire Nails or so-called Iron Nails, the Nails soon become rusted. Simultaneously with the rusting of the Nails the hole made by the Nail commences to enlarge and in a few years the shingles are ruined and have to be replaced.

Our firm long ago adopted the use of Galvanized Nails not only for shingling and slating, but for laying clapboards and for fence building as well. We find that even the first cost of using Galvanized Nails is not nearly as much as is generally supposed. We can buy the very best Galvanized Nails at an advance of about $2.50 per keg over ordinary Black Nails. Sixty pounds of Galvanized Nails will lay about 10,000 shingles, which is about the amount required for the ordinary cottage house. The cost of shingling the ordinary cottage house with Galvanized Nails is thus considerably less than $2 above what it would cost to use the Black Nails.

If the Nails are heavily coated with pure zinc they will outlast the best of shingles. I have removed shingles laid with Galvanized Nails and found the Nails to be as perfect as the day they were driven. I refer to Nails coated with pure zinc, and not "leaded" Nails or those coated with zinc dross. The latter can easily be detected by their color, being black and thinly coated, while the zinc coated Nails are comparatively bright. The zinc coated Nail costs but little more than a leaded Nail, and leaded Nails are little if any protection against rusting. The same is true of any light coated Nail, whether the coating be zinc or zinc dross.

I find that many contractors and carpenters take the same view of the use of Galvanized Nails that I do. The head of one of the largest building firms in New England recently said, in a letter on the subject, in part, as follows: "We have about decided to use nothing but Galvanized Nails for shingling purposes. We find with the light weight of Steel Cut Nails now on the market that their life is about ten or fifteen years, and that while the shingles on a roof are sound and still good for ten years more of service the Nails are worthless and a new roof has to be put on." READER.

Accompanying the above letter our correspondent sent samples of some Galvanized Shingle Nails that have recently been taken from a seashore cottage. These Nails, our correspondent states, were driven over 26 years ago, and are still in good condition. The shingles which they held were so badly rotted away that they are being replaced.

GEO. H. BISHOP of Geo. H. Bishop & Co., Saw manufacturers, Cincinnati, Ohio, has just returned from his semiannual trip of two months through the Northwest and out to the Pacific Coast. Mr. Bishop reports business in the Far West as in fine condition, the trade generally placing orders unhesitatingly and with confidence as to the immediate future.

THE MARSHALL-WELLS HARDWARE COMPANY, Duluth, Minn., has purchased for $40,000 a block of ground in Portland, Ore., where the company already has a branch establishment. The erection of a large brick warehouse, in which Heavy Hardware will be stored, will be begun at once.

CHURCHILL-HEMENWAY COMPANY'S STORE.

THE accompanying illustrations relate to the establishment of Churchill-Hemenway Company of Galesburg, Ill., which has recently been enlarged and rearranged and a number of new features introduced. The front of the store, shown in Fig. 1, the curved glass windows and owls, the latter being the company's trademark, are prominent features of the store and are quite familiar to the people of the territory with which the company has to do. In Fig. 2 the present arrangement of the first-floor salesroom is shown, a general view being given in Fig. 3. An addition 40 feet long has been made to the rear of the building, giving basement, first and second floors, 30 x 140 feet in size. The establishment also includes a room 44 x 60 feet in size in the adjoining building.

Fig. 1.—Front of Churchill-Hemenway Company's Store.

Fig. 3.—First-Floor Salesroom of Churchill-Hemenway Company's Store.

The first-floor ceiling is 16½ feet high, and the shelving extends to the ceiling on both sides of the room. The showcases extend to the floor, giving a great deal more

room than the original old style cases. Along the right hand side of the room tables have been placed with shelv-

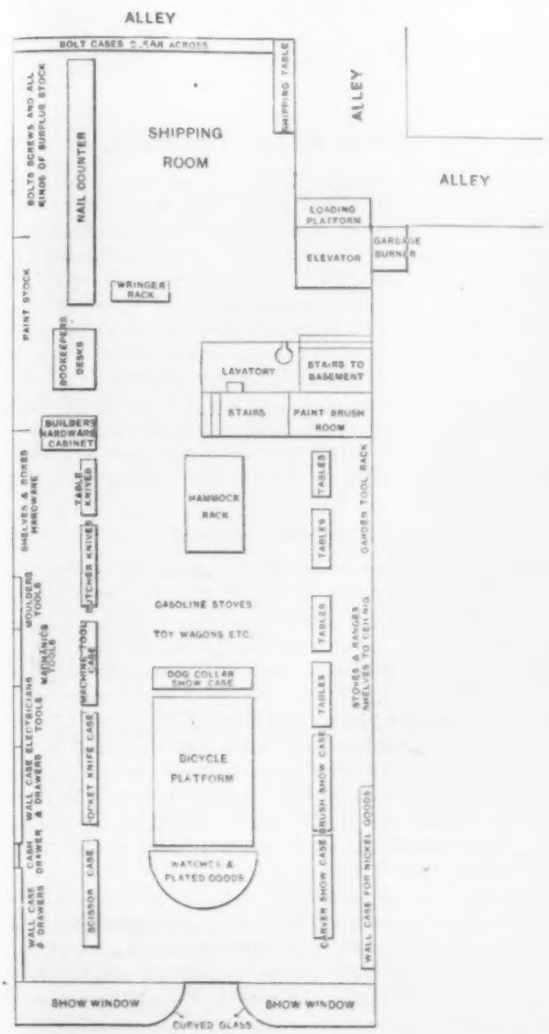


Fig. 2.—First-Floor Plan of Churchill-Hemenway Company's Store.

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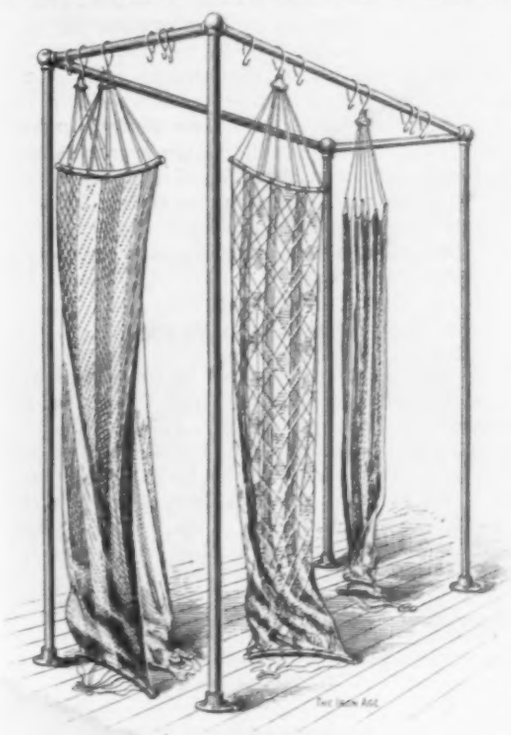

Fig. 4.—Hammock Rack.

Ranges, on the same side of the room, above which is shelving. The shelving on the left hand side of the room is devoted to Hardware and a ledge 13 inches wide extends its entire length. There are also four traveling ladders on this side for reaching the higher shelving. The Stoves have been moved from the first floor to the stove room, on the second floor. An electric elevator for passenger and freight service has recently been installed. It has been found a great deal more convenient to have the strictly hardware business confined to the first floor, and a great deal better for the Stove business to have it thus separated, as it is much easier to sell customers Stoves when salesmen can get them off by themselves than to try to make sales in the main salesroom.

A sample room has been added on the second floor, in which is a cabinet containing a full line of Builders' fine Hardware, a large table for showing samples and arm chairs. This has proved a great convenience in the sale of this class of goods. A cabinet has also been fitted

Fig. 5.—Refuse Furnace.

up on the first floor containing cheaper grades of Builders' Hardware and all cheaper Trims, with a desk close at hand for contractors' use. When a customer wishes to buy a bill of this class of Hardware he can be seated at the desk to write and figure, while at the same time he can be shown samples of the goods in the cabinet. This is located on the left hand side of the store, near the bookkeeper's desk. There are eight telephones to connect the various parts of the store and they can be switched on to the regular city system.

A Hammock rack, which is an addition to the store equipment, and shown in Fig. 4, has proved the best arrangement from which to sell Hammocks that the company has ever used. It is made of 1¼-inch gas pipe, high enough so that the longest Hammock can hang from the top of the rack and not touch the floor. The rack holds about six dozen Hammocks and any one can be shown by taking hold of the lower end and drawing it out a little.

In Fig. 5 is a furnace for burning refuse which the company has erected on the alley near the rear of the building, its location being shown in Fig. 2. It is made of firebrick and is about 3 feet wide and 4 feet long, with regular furnace grates and an ashpit door. The furnace is connected with the chimney already in use. The refuse

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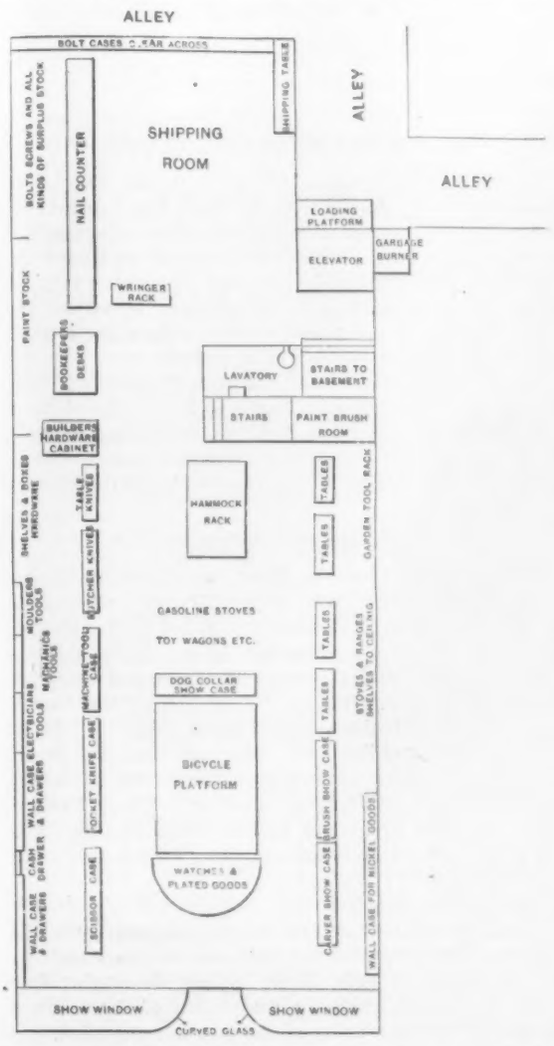

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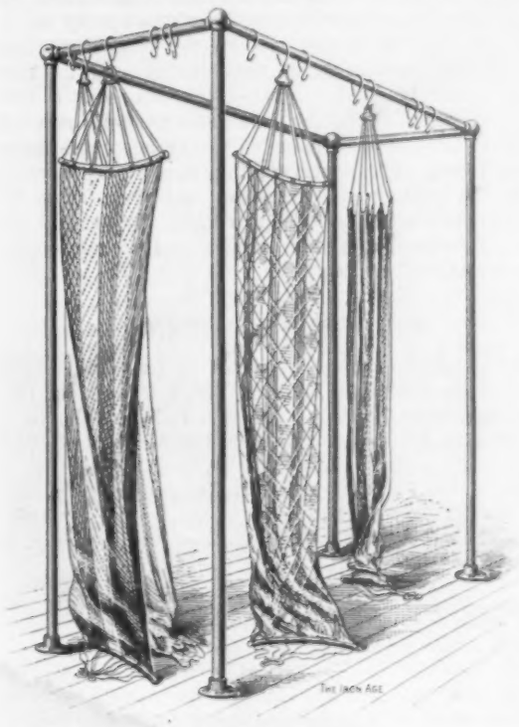

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around the store and alley is swept up every morning and burned. The furnace not only furnishes a way of disposing of this refuse, but keeps a good deal of dust out of the store and cleans up the alley. As one of the company's employees built the furnace, the expense of putting it up was small.

The company is using more advertising space in the newspapers than ever. The same articles are advertised in all of the papers at the same time and the window displays correspond with the goods advertised. It is found that this systematic advertising brings better results than advertising different lines of goods in each paper.

HARDWARE DEMANDS IN ASIA MINOR.

FROM A SPECIAL CONTRIBUTOR.

Are our Hardware manufacturers and merchants taking heed of the vast market which the Konieh & Busra Railway will soon open for the trade in Asia Minor, or are they going to wait until some other nation (Germany, for example) secures the trade, and then fight for it afterward under unfavorable conditions? Do they fully appreciate the importance of this market or the extent to which it will be opened by the railway in question? Or are they more interested in lessening the future cost of production at home than seizing the present large profits of this trade abroad?

The Field of Trade in a Nutshell.

The official communications of the few consuls whom we have stationed here and there in Asia Minor teem with references to this neglected trade, but their reports are mostly local and fragmentary; they do not cover the whole ground, and for this reason perhaps their suggestions have not received the attention which the general subject demands.

Asia Minor has a population of nearly 30,000,000; it is one of the finest regions in the world for the production of every sort of agricultural and mineral commodity, from wheat to frankincense, from cotton to attar of roses, from petroleum to iron and gold. Yet, under the influence of doctrines and beliefs which admit of no progress, of governments which permit of innovations with reluctance, and of officials who live upon graft and discourage improvements, it has lain inert for centuries and some of its once prosperous districts are almost deserted for lack of irrigation.

The Awakening of Asia.

Of late years, owing to the pressure of foreign travelers and foreign military and commercial demands, there has been considerable improvement. Russia threatens a flank movement through the Caucasus and Persia; Great Britain is pushing into the neglected ports of the Levant; France has a rising trade in the Black Sea; but, above all, Germany has secured a great railway, and it is this important and life giving artery which will soon revivify and transform Asia Minor into one of the greatest markets in the world.

The Konieh-Busra Railway.

This railway runs from Scutari, opposite to Constantinople, to Busra, or Bassora, near the mouth of the Euphrates, and the head of the Persian Gulf. It is over 1600 miles long, or nearly the distance from Omaha to San Francisco. It runs southward through the Sakaria Valley to Kutayah; thence to Konieh in Caramania, to Adana at the head of the Iskanderoon Gulf; thence eastward to Harran on the Euphrates; thence to Nisibis on the Khabour, and thence southward by the Tigris and through the Mesopotamian Valley by Mosul and Baghdad to Busra. It is being rapidly built and some of the sections are nearly completed. After it is opened for traffic the entire nature and current of the Levantine trade will sustain a notable change. When in 1501 Americus Vespucci met Cabral's fleet at the Cape de Verde Islands on its return from India he wrote home to the Medici: "Now will spices go from Portugal to Italy, instead of as hitherto from Alexandria to Portugal. *Cosi va el mundo!*" The great navigator's words proved to be prophetic. The new sea route to India at once destroyed the eastern trade of Venice and Genoa. So it will be with the Busra Railway. The entire trade of the Levant is going to be changed, and the first step in this change will affect the Hardware trade, for it is upon this trade and its numerous allied branches of Tools, Implements, Machinery and labor saving devices that all other trades depend.

The Practical Hardware Situation.

The practical question for the American Hardware manufacturer and merchant is, In what way can we best prepare for this change and the vast demands which it promises to occasion? What kind of goods will meet the quickest or most profitable returns? How can they be marketed? What steps should be taken to secure the trade? In the present phase of the subject these questions can only be answered in a general way. As the railway nears completion and the new channels of trade which it is bound to create begin to be developed they can be answered more specifically. Something depends upon the restrictions which may be placed upon the overland traffic; something on the harbor improvements at Alexandretta, &c.

Kinds of Goods Wanted.

The first needs of Asia Minor, as indicated by the shipments now in progress from this and other countries, are Agricultural Implements, Wind Mills, Pumps, Iron Piping, Wire, Wire Fencing, Tacks, Nails, Screws, Bolts, Carpenters' and Blacksmiths' Tools and Supplies, Builders' Hardware, Cutlery, House Furnishing Goods, Lamps, Sewing Machines, Typewriters, Bicycles, Clocks, Saw Mills, Automobiles and other vehicles, and small Steam Engines fitted to consume Crude Oil, of which there are native supplies at various points. Designs should be devoid of human figures, birds or other animals. Cases should be small and the packing very carefully attended to.

Hitherto these requirements, owing to the inaccessibility of the interior country, have been comparatively limited, but capital is advancing with the railway, and the Hardware trade of Asia Minor is fast developing into an importance that upon the completion of the railroad is certain to become worthy of the greatest attention.

How to Establish a Trade.

Present connections for marketing these classes of goods can be made with the American Consuls at the Levant ports, at Sinope and Trebizond on the Black Sea, and at Sivas and Harput in the interior. But by far the best way to secure orders, and at the same time obtain that further knowledge of the country and its needs which future trade demands, is to send to it a trustworthy commercial traveler who has a general knowledge of the trade and some command of the languages spoken on the route. The American Consul at Harput recommends the sending of "American traveling agents well equipped with samples, who can study the general commercial situation, establish agencies and stimulate direct trade relations."

KEYSTONE LANTERNS.

A DECISION has been rendered in the United States Circuit Court of Appeals, Third Circuit, in favor of the Keystone Lantern Company, Philadelphia, in the suit brought against it for alleged infringement of patent No. 413,464. The opinion of the Court sustaining the appeal of the Keystone Lantern Company was rendered by Judge McPherson March 24. This, we are advised, is the last of the suits brought against the company, the others also having been decided in its favor.

A CORRESPONDENT in Australia referring to the development of the department store idea in that country calls our attention to the new building which Anthony Hordern & Sons are about to occupy. This structure covers an area of about 3 acres and has a total floor space of 15 acres, making it one of the largest emporiums in the world. This firm is known in Australia as "Universal Providers."

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, NORFOLK ST., LONDON, W. C., March 4, 1905.

The Condition of the Hardware and Metal Trades.

THE state of trade in the different departments of the Hardware and allied trades is set forth in the following *résumé* of employment conditions for the month of February:

Brasswork, Bedsteads, &c.—With brass workers employment was bad and about the same as a year ago, though improving at Birmingham. With Bedstead makers and with Fender and Fire Brass makers it was no better.

Nuts, Bolts, Nails, &c.—At Birmingham and Smethwick employment was moderate in the Nut and Bolt, Machine made Rivet and Cut Nail trades; quiet on Wire Nails. At Blackheath it was slack on Rivets and Wrought Nails. At Darlaston there was an improvement in the machine Nut and Bolt trade. At Dudley employment in the Nut and Bolt trade was quiet; in South Wales it was fair.

Tubes.—Employment with Copper Cased Tube and Brazed Tube makers was moderate. In the South Staffordshire and South Wales Tube trades employment was slack.

Chains, Anchors, &c.—At Cradley employment was slack with Block Chain makers, moderate in other branches of the Chain trade. At Pontypridd it was good; at Gateshead Chain makers were not so well employed as a month ago, and on small work were slack. In the Anchor trade employment was slack; with Anvil and Vise makers it was fair and better than a month ago. Employment was very bad at Walsall in the Case Hame, Buckle, Bit and Stirrup trades. In the Axle, Spring and Tire trades employment was fairly good.

Locks, Keys and General Hardware.—In the Lock and Latch trade employment continued bad and worse than a year ago; short time was general. With Hollow Ware makers at Birmingham and Wolverhampton employment was moderate, at West Bromwich quiet but improving. It was good with Hoe makers at Wednesbury, Spade and Fork finishers at Stourbridge, and Shovel makers at Leeds. At Wolverhampton it was good with makers of Iron Fences and Hurdles, improved with enamelers, slack with galvanizers and with makers of Builders' Ironmongery and Vermin Traps.

Cutlery, Tools, &c.—In the Cutlery trades employment continued slack, except with Sheep Shear makers. With Edge Tool makers it was quiet at Sheffield and Birmingham, good at Wolverhampton. In the File trade it was slack at Sheffield, except with the hand forgers, who were moderately employed; at Birmingham and Wolverhampton it was moderate. At Redditch employment with Needle makers was reported as improving, and the Fish Hook trade was busy, overtime being worked.

Stoves, Grates, &c.—Employment continued bad, with much short time.

Sheet Metal, &c.—Employment was slack on the whole, with some short time. An improvement was reported with Tin Plate workers at Birmingham, Wolverhampton and Nottingham. At Manchester braziers were busy and overtime was worked. Employment was fair at Hull and Exeter, moderate at Oldham.

Wire.—With Wire drawers employment was fairly good, and rather better than a month and a year ago. With Wire weavers it was good at London, Glasgow and Norwich, bad at Birmingham. With Wire workers it was very bad in London, quiet at Manchester and fairly good at Glasgow.

The Sheep Shear and File Trades.

The Sheep Shear trade in Sheffield is prosperous. Manufacturers have lately received some good orders and the prospects are bright. Australian business is improving and from one of the colonies comes the report that they have now 2,000,000 more sheep. This of course means that more Shears will be needed. The Argentine trade is also improving and good orders are anticipated from that part of the world. The trade with Russia has been declining for a considerable time and there are no signs of a revival. With the war and internal disturbances this commercial depression is not, perhaps, surprising. The same remark applies to the trade which Sheffield manufacturers are doing with Russia in Files. Business is at a very low ebb, but fortunately there is not the same depression everywhere. The File trade has been going ahead slightly during the first quarter of the year and firms have received some good orders from the Continent.

Cutlers' International Congress in Germany.

An international congress of workmen in the small Steel Ware and Cutlery trade is to be held at Solingen this autumn. Promises to attend the meeting have so far been received from the Austro-Hungarian, Swiss and English trade associations in these branches. The central committee of the Solingen trade unions has undertaken the preparation for the congress.

Proposed Limitation of Output in the Galvanized Sheet Trade.

For some time past there has been much talk of concerted action in the Galvanized Sheet trade, and I have three or four times within a few months made mention of it. At a meeting held in Bristol last week, several of the leading manufacturers of the country being represented, some kind of rough provisional arrangement was formulated, and it was furthermore decided that a circular should be drawn up and issued to the entire trade with a view of arriving at some satisfactory solution of the difficulties with which it is at present encompassed. The price of Galvanized Sheets has for a very long time been out of all proportion to the cost of raw materials, particularly spelter, and the depression has arisen entirely from enormously increased production. Tentative proposals which will be laid before the trade do not contemplate any attempt to fix selling prices. It is intended rather, by bringing about an all round restriction in the output, to allow the market to find its own level, which, of course, will be higher than £9 17s. 6d. a ton, or thereabouts, for merchant lines of 24-gauge Sheets in bundles, f.o.b. Liverpool.

THE WILLIAM H. HASKELL MFG. COMPANY.

THE WILLIAM H. HASKELL MFG. COMPANY, Pawtucket, R. I., has issued a new catalogue setting forth its lines of Gimlet Pointed Coach Screws, Machine Bolts, Loom Bolts, Milled Capped Cap Screws and Set Screws, Clinch Rings, Cold Punched Square and Hexagon Nuts, Clearer Springs, Chain Links, Levers and Stirrups, Wrenches, Keys, &c. The catalogue is an elaborate one, bound in cloth, with 165 pages, copiously illustrated in half-tone and line cuts. In addition to the space occupied by the lines of manufactured product the catalogue gives important and useful tables for users of metals, including weight of round iron per lineal foot, of square iron per lineal foot, of flat iron per lineal foot and of sheet metals per square foot.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our Catalogue Department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

STAR HEEL PLATE COMPANY, Newark, N. J.: Illustrated catalogue and price-list, No. 10, of Cobblers' Outfits in large variety, Iron Shoe Lasts and Stands, Star and Boston Heel Plates, Shoe Hammers, &c.

S. P. TOWNSEND & Co., Orange, N. J.: Booklet illustrating the different machines embraced in the Townsend Ball Bearing Lawn Mower line.

H. L. HURST MFG. COMPANY, Canton, Ohio: Circulars of Hurst's Adjustable "Fitz-All" Barrel Pump, Spraying and Force Pump and Combination Potato and Orchard Sprayer.

SIEMON & ELTING, 194 Front street, New York: Circular of Shapley's Patent Marine Glue, which is referred to as absolutely water proof.

EAGLE COOPERAGE WORKS, Circleville, Ohio: Booklet attractively setting forth the merits of the Eagle Mop Wringer and Bucket.

THE SUN MFG. COMPANY, Columbus, Ohio: Catalogues covering Cash Registers, Showcases, Coffee Mills, Money Drawers, Rat Traps and Lawn Furniture.

THE HOPKINS & ALLEN ARMS COMPANY, Norwich, Conn.: Postal folder calling attention to the Hopkins & Allen Junior Rifle.

THE GOULDS MFG. COMPANY, Seneca Falls, N. Y.: Catalogue of Goulds Sprayers for those who raise products of the soil; also for poultry and stock raisers.

THE A. J. PHILLIPS COMPANY, Fenton, Mich.: Catalogue B, devoted to Custom Made Fly Screens, presenting information by means of which Hardware merchants may intelligently have Screens made to order for their

customers. Samples of woods, finishes and wire cloth will be supplied on application.

THE AMERICAN SCREEN DOOR COMPANY, with factories at Ironton, Mo., and Adrian, Mich.: Catalogue of Screen Doors, Adjustable Window Screens and Window Screen Frames.

THE WILLIAMS & GOLDENBLUM COMPANY, Wallingford, Conn.: Price-list of the Boss Cutter Hack Saw Blades and Band Saws.

AMERICAN HARDWARE MFG. COMPANY, Ottawa, Ill.: Circulars of the American Door Catch, American Adjustable Shoe Trees and Illinois Dairy Separator, with turbine disk bowl.

ADVANCE MACHINERY COMPANY, Toledo, Ohio: Booklet in which the construction and special features of the Wetmore Patent Glue Heater are briefly pointed out.

J. F. KIDDER MFG. COMPANY, Burlington, Vt.: Circular descriptive of the Little Blacksmith Punch, Shear and Bender combined.

CHAS. MORRILL, 277 Broadway, New York: Catalogue of Morrill's Hardware Specialties, including Nail Puller, Saw Sets, Seal Press, Bench Stops, Punches and Spike Puller.

BAKER & HAMILTON, San Francisco, Cal.: Circulars relating to Victor Athletic Goods, Wall Tents, Gillette Razors and Lambert Typewriter, for which they are Pacific Coast agents.

Cycle Ball Bearing Steel Frame Grindstone No. 300.

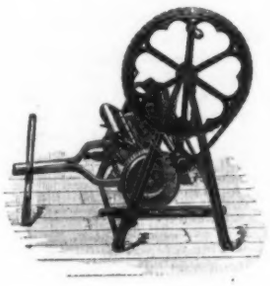
The front and rear legs of the grindstone frame shown herewith are each formed of one piece of heavy steel angle. The upper frame is constructed to form a brace for the legs, to make a frame that will be most rigid.

Cycle Ball Bearing Steel Frame Grindstone No. 300.

The stones are of the best quality Berea grit, from 19 to 22 inches in diameter and 2 to 2¼ inches thick. The device is crated in knockdown form for shipping, and has recently been put on the market by the Richards Mfg. Company, Aurora, Ill.

Ideal Lawn Mower Grinder.

The Root Brothers Company, Plymouth, Ohio, manufacturer of hardware specialties, is offering the improved Ideal lawn mower grinder, here illustrated. The grinder has been rebuilt on stronger and heavier lines, but embodies principles of construction similar to the older lawn mower grinder. It can be furnished for either hand use or power, the latter being the same as hand machine with addition of power attachment, having tight and loose pulleys. The power grinder can be operated by hand also. The grinder is 27 inches wide inside the frame, will take mowers with 20-inch blades, and will also handle the largest high wheel mower on the market. The main driving shaft, which carries the emery wheel, is 1⅛ inches diameter and the emery wheel is 6 inches diameter by

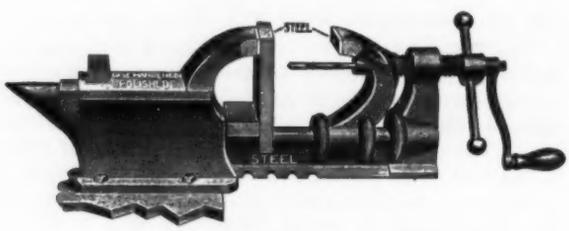


Ideal Lawn Mower Grinder.

½ inch face. The power pulleys are 6 inches diameter by 1¾ inches face for 1½-inch belt. The weight of the hand grinder is about 80 pounds and of the power grinder 95 pounds. In operation the lawn mower is placed upside down on the horizontal adjustable rods, the adjustment vertically being done by a single lever and in and out adjustment by a single crank. The final adjustment is accomplished by the use of wing nuts on the back of the machine. But one adjustment is required for all the blades. The reel knife is held in position by a finger, the point of which travels in front of the emery wheel and maintains a fixed position, moving with the emery wheel in a horizontal direction toward the large fly wheel. When the emery wheel reaches the end of blade the steel spring which engages the thread of the long screw is raised by means of a device, and, after stopping the grinder, the emery wheel is pushed back to the left side and the next blade passes under the finger. The straight cutting bar on three-bladed mowers can be sharpened without removal from grinder, but on four or five bladed mowers it is removed and held on a special bar with clamp provided.

Combination Vise, Anvil and Drill.

Bloomfield Mfg. Company, Bloomfield, Ind., has just brought out the combined vise, anvil, drill and hardy here



Combined Vise, Anvil, Drill and Hardy.

illustrated, which the company refers to as the New Banner tool combination. The hight of the device is 8½ inches; width of jaw, 3½ inches; jaws open, 6 inches; depth of throat, 5½ inches. The jaws are faced with steel and polished; top of anvil is case hardened and polished; anvil is provided with a good steel cut off or hardy; drill stock will take any common sized square shank drill bits; drills ½-inch holes readily and is capable of drilling both larger and smaller holes. It is easily and quickly manipulated and can be converted from vise to drill instantly by merely removing the drill bit. The draw bar is made of steel T-rail and there are no screws or bolts to take out. The draw bar can be taken out and by sliding the loose jaw off and reversing it it can be used as a portable drill. The tool is guaranteed for one year.

Shipping Pail and Tub with Sealed Cover.

Quincy Stamping Company, Quincy, Ill., has put on the market the metallic shipping pail and tub for solids and liquids, with sealed cover, here illustrated. The pail is formed and assembled from black steel, double seamed and galvanized in pure metal, which thoroughly solders

Fig. 1.—Shipping Pail, with Wood Cover and Seal.

all seams and prevents possible leak when liquids are carried. Fig. 1 shows the pail with handle or bail with wood cover (A in Fig. 2), which is fastened with a heavy steel band (C) closely fitted to the pail and locked with wire and lead seal (B), which does not injure or mar the pail. It will hold approximately 21 quarts of liquid

Fig. 2.—Parts of Pail.

or 30 pounds of goods of solid character, varying with the contents carried. The tub, with wire side handles, Fig. 3, is for similar uses. Both are designed to safeguard contents such as candy, coffee, crackers and any of the multitudinous articles for which they are suitable, and prevent pilfering while in transit. The contents of these

Fig. 3.—Shipping Tub, Similar Construction.

packages, which are both light and strong, cannot be tampered with without making the fact apparent, thereby protecting shipper and consignee and preventing both loss and vexatious claims, where responsibility is hard to fix. When they have served their purpose as carriers either can be put into a merchant's stock or used for scrubbing, ashes, garbage, watering stock on a farm, &c.

Premier and American Lemon Squeezers.

Logan & Strobridge Iron Company, New Brighton, Pa., is offering the new lemon squeezers shown herewith. Fig. 1 illustrates the Premier style, No. 100. It has a

Fig. 1.—Premier Lemon Squeezer.

rotary plunger motion, will accommodate the largest lemons and, it is said, will extract all the juice. It has a separate strainer cup with handle, by means of which the rind and seeds can be discarded without soiling the hand. Fig. 2 shows the American squeezer, No. 50, which has some of the same features. Both can be attached readily to bench, table or bar. The metallic parts which contact with the juice are heavily coated with pure tin

Fig. 2.—American Lemon Squeezer.

to prevent corrosion. Both have adjustable glass holders and handles that extend backward and out of the way when not in use, and are finished in heavy polished nickel or oxidized copper, packed singly in a strong box or six in a case. These squeezers are recommended by the makers especially for bars, hotels, restaurants, soda fountains and similar places, as well as kitchen or club.

The Carpenter & Souder Hardware company has been incorporated at Newcastle, Ind., with $5000 capital stock, by Orville O. Carpenter and Bert Souder.

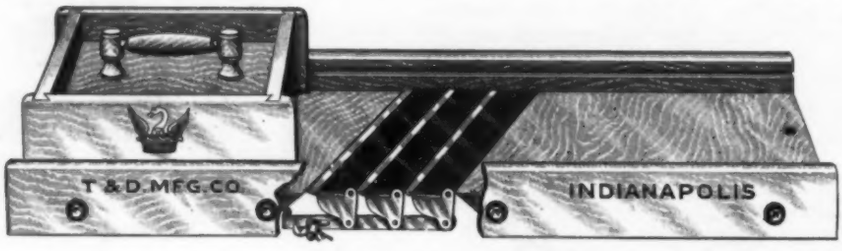
Nitro Special Shotgun.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass., has just begun the manufacture of the nitro special single barrel shotgun, No. 93, here illustrated. This gun has been built especially for the use of the dense nitro powders which have come into general use, the average shotgun never having been intended to withstand the additional strain of nitro powder charges. This gun has an extra heavy breech, is made in 12 and 16 gauge, length of barrel 28, 30 and 32 inches, and frame either nickel plated or case hardened. The barrel is of special steel with cannon breech, has top snap and rebounding hammer action and coil springs. The walnut stock has a pistol grip and rubber butt plate, and the gun is adapted for any standard make of ammunition. This shotgun can be furnished in both extractor and ejector styles, the latter being known as No. 97.

Nitro Special Shotgun, Single Barrel.

New Kraut Cutters.

The Tucker & Dorsey Mfg. Company, Indianapolis, Ind., is placing on the market for the coming season two new lines of kraut cutters. The Indianapolis cutter here illustrated is of heavy construction, and has highly finished tempered steel knives adjusting easily in one operation, with pull and locking device at both ends. The side rails are bolted to head blocks in which the grain of the wood runs crosswise to prevent warping. The sliding box is furnished with a protecting lid, has mortised, dovetailed corners and inserted runners working in polished grooves in the side rails. The knives are pivoted at the heel so that the cutting edges are raised or lowered without changing the position of the back of the knife. The Indianapolis cutter is made in three sizes with two, three and four knives. The wood work is given a satin finish in the white. The other new line, the Queen, possesses the same general features as the Indianapolis, but in addition has nickeled and polished concave knife rigidly bolted through side plates.



Indianapolis Kraut Cutter.

Yacht Saluting Gun.

Barney & Berry, Springfield, Mass., are manufacturing the Reliable saluting gun with pedestal mounting, here illustrated. The pedestal mounting is designed to economize space as well as to obviate the necessity of lashing the gun to deck of vessel. A permanent socket receives the foot of the pedestal, which may be instantly removed if necessary. The barrels are of the toughest gun metal, designed after naval patterns, and are thoroughly tested. The general character of the gun and improved firing mechanism, which makes the firing easy and discharge certain, is similar to a line of yacht saluting cannon, both single and triple barrel, mounted on mahogany carriages, which they have made for several years. In operation the breech block is moved to the right by lever A, the shell inserted and with the same lever the breech block is moved to the left, where it is automatically locked in firing position. In firing the lanyard attached to firing lever B is pulled, which raises and trips hammer C, bringing the firing pin in contact with primer, making, it is said, an explosion sure if the primer is right. Advantages of this construction are referred to as convenience in loading on account of simple breech action, and safety when loading and freedom from the chance of premature explosions, as hammers are never cocked. Guns can be specially bored one gauge smaller than regular without extra charge if the buyer desires to save expense in ammunition. Blue prints from the working drawings, showing the elevation of any size, will be mailed for examination to interested parties. The guns can be supplied in barrel lengths of 17, 22, 26 and 30 inches, corresponding bores being 1, 1¼, 1½ and 1¾ inches, taking standard shells of 4, 3, 2½ and 2 gauge, respectively. With each gun is included a canvas cover, wiping rod and gun brush.

Saluting Gun, Pedestal Mounted, for Yachts.

Bench Drill Presses.

Millers Falls Company, 28 Warren street, New York, has just brought out two entirely new styles of bench drill presses, as here illustrated, differing radically from other drill presses of its manufacture and much more moderate in price. Fig. 1 represents the bench drill press No. 22.

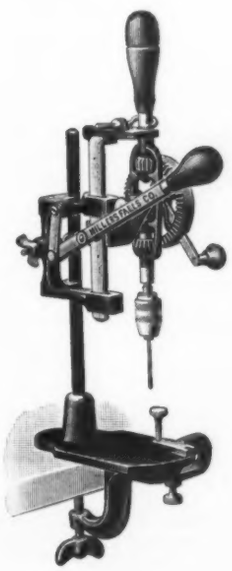


Fig. 1.—Bench Drill Press No. 22.

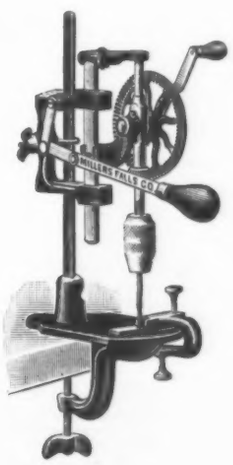


Fig. 2.—Bench Drill Press No. 23.

It is designed for use in connection with the company's hand drills Nos. 1, 2 and 5, either of which may be attached to the frame quickly and easily, if the individual already possesses the drill, or the frame complete with any of the drills named can be furnished. The feed is supplied by a compound lever, which is convenient, sensitive and effective. The frame proper is made of steel and iron, japan finished. The distance between the chuck and table when hand drill No. 1 or No. 5 is used at highest point is 7¼ inches. When hand drill No. 2 is used the distance is 6½ inches. The hight over all above table is 15½ inches; weight 7½ pounds. Fig. 2, bench drill press No. 23, is similar to the No. 22 except that it has a permanent operating attachment with geared spindle and drill chuck holding drills from 0 to ⅜ inch. The distance from chuck to table with sliding frame at highest point is 6½ inches. The finish is japan and bright nickel; weight, 8½ pounds. Both drills are put up in telescope boxes, 17½ x 7½ x 4¾ inches.

Johnson Trayless Fishing Tackle Box.

The Merriam Mfg. Company, Durham, Conn., has put on the market the Johnson trayless tackle box here illustrated, which in general construction and finish is similar to the well-known lines of japanned tin cash and bond boxes long made by the company. The extreme outer dimensions, closed, are: length, 11½ inches; width, 6 inches, and hight, 4¼ inches, with no trays to lift out and possibly upset. One motion opens the box flat from the center like a leather suit case, so that its contents are instantly available. The double sections are each 11 x 5½ x 2 inches, the bottom part having suitable space for reels, &c., while snells, hooks and kindred gear go in the upper pockets, over which a hinged lid with handy slide fastenings shuts down to hold all snugly in place. There is also adequate room between the sections for fly book, extra coils of lines, &c. The box has a good tumbler lock with two flat steel keys, and for additional convenience in carrying has an entirely new fastening device, not shown in the illustration, which closes over the lock escutcheon and holds it firmly shut without the use of key.

Johnson Trayless Fishing Tackle Box.

PAINTS, OILS AND COLORS

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	9¼@ 9¼
Lead, American white, in Oil:	
Lots of 500 lb or over	@ 6¾
Lots less than 500 lb	@ 7
In Barrels	@ 6
Lead, White, in oil, 25 lb tin pails, add to keg price	@ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price	@ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	@ 1½
Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.	℔ lb
Lead, White, Dry in bbls	@ 6
Zinc, American, dry	4¾@ 4¾
Zinc, French:	
Paris, Red Seal, dry	8½
Paris, Green Seal, dry	9¾
Antwerp, Red Seal, dry	7½
Antwerp, Green Seal, dry	8½
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	11⅞@12⅝
Lots of less than 1 ton	12½@12⅝
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	10⅝@11¼
Lots of less than 1 ton	10⅞@11⅝

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black, Drop, Amer	4 @ 6
Black, Drop, Eng	5 @15
Black, Ivory	16 @20
Lamp, Com	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	¼@ 1
Carmine, No. 40	$3.55@4.00
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ⅓ bbls. and kegs:	
Lots 500 lb or over	@ 6½
Lots less than 500 lb	@ 7
Litharge, American, bbls	6 @ 6½
Ocher, American	℔ ton $8.50@15.00
Orcher, American Golden	2½@ 3½
Orcher, French	1¾@ 2¼
Orcher, Foreign Golden	3 @ 4
Orange Mineral, English	8¾@10½
Orange Mineral, French	10½@11¼
Orange Mineral, German	7¾@10
Orange Mineral, American	8 @ 8¼
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¼
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1½@ 2
Talc, French	℔ ton $20.00@30.00
Talc, American	℔ ton 16.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
Terra Alba, English	℔ 100 lb 90 @1.00
Terra Alba, American,	℔ 100 lb., No. 1 .60 @70
Terra Alba, American,	℔ 100 lb., No. 2 .45 @50
Umber, T'key, Bnt. & Pow	2½@ 3½
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1½@ 2
Umber, Raw, Amer	1½@ 2
Yellow, Chrome	11 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@66
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

Miscellaneous—

Barytes, White, Foreign	℔ ton $17.50@19.00
Barytes, Amer. floated	℔ ton 17.00@19.00
Barytes, Crude, No. 1	℔ ton 10.00@11.00
Chalk, in bulk	℔ ton 3.00@ 3.25
Chalk, in bbls	℔ 100 lb @ .35
China Clay, English	℔ ton 11.00@17.00
Cobalt, Oxide	℔ 100 lb 2.50@
Whiting, Common	℔ 100 lb .45@ .48
Whiting, Gilders	℔ 100 lb .55@ .57
Whiting, Ex. Gilders	℔ 100 lb .58@ .60

Putty Commercial—℔ 100 lb

In bladders	$1.70
In bulk	1.05@1.10
In cans, 1 lb to 5 lb	2.00@2.90
In cans, 12½ to 50 lb	1.40@1.55

Spirits Turpentine—℔ gal.

In Oil bbls	.57 @57½
In machine bbls	57½@58

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	18 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	32 @33
Bone Dried	42 @43
Button	36 @45
Diamond I	50 @52
Fine Orange	40 @45
A. C. Garnet	34 @35
D. C.	1.10@1.20
Octagon B	45 @50
T. N.	33 @35
V. S. O.	50 @52

Animal, Fish and Vegetable Oils—℔ gal

Linseed, City, raw	47 @48
Linseed, City, boiled	49 @50
Linseed, State and West'n, raw	45 @46
Linseed, raw Calcutta seed	@55
Lard, Prime, Winter	57 @59
Lard, Extra No. 1	48 @49
Lard, No. 2	36 @38
Cotton-seed, Crude, f.o.b. mills	19¾@21
Cotton-seed, Summer Yellow, Prime	26 @26½
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	60 @..
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natura' Winter	62 @64
Sperm, Bleached Winter	65 @67
Tallow, Prime	47 @49
Whale, Crude	@..
Whale, Natural Winter	44 @..
Whale, Bleached Winter	46 @..
Menhaden, Brown, Strained	28 @29
Menhaden, Light, Strained	29 @30
Menhaden, Bleached, Winter	31 @32
Menhaden, Ex-Bld. Winter	32 @33
Menhaden, Southern	19 @..
Cocoanut, Ceylon	℔ lb 6¾@ 6½
Cocoanut, Cochin	℔ lb 7¼@ 7½
Cod, Domestic, Prime	34 @36
Cod, Newfoundland	39 @41
Red Elaine	30 @32
Red Saponified	℔ lb 4 @ 4¾
Olive, Italian, bbls	55 @58
Neatsfoot, prime	50 @51
Palm, Logos	℔ lb 5½@ 5¾

Mineral Oils—

Black, 29 gravity, 25@30 cold test	℔ gal. 10¼@11½
Black, 29 gravity, 15 cold test	11¼@12½
Black, Summer	10¼@11½
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	12½@13
Paraffine, 903 gravity	11½@12
Paraffine, 883 gravity	9¼@ 9½
Paraffine Red	11¼@13

In small lots ½¢ advance.

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1904, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition— See *Caps, Cartridges, Shells, &c.*

Anvils—American—
Eagle Anvils.....℔ lb 7¼@7¾¢
Hay-Budden, Wrought.....9@9¼¢
Horseshoe brand, Wrought.....9@9¼¢
Trenton .....℔ lb 9@9¼¢

Imported—
Peter Wright & Sons.....℔ lb 10½¢

Anvil, Vise and Drill—
Millers Falls Co., $18.00.....15&10%

Apple Parers— See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co.....33⅓%

Augers and Bits—
Com. Double Spur.....70&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Jennings' Patn. reg. finish.50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—
See *Drills, Twist.*

Expansive Bits—
Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....50&10%
Ford's, Clark's Pattern.....50&10@60%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—
Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—
Bonney Pat., per doz..$9.00@10.00
Ames .....25&10%
New Patent.....25&10%
Universal 20%
Wood's Universal.....25%

Ship Augers and Bits—
Ford's .....33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts— See *Hafts, Awl.*

Awls—
Lead Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights. (up to 3½ lb.)
First Quality.....$6.50
Second Quality.....$5.00
NOTE.—Heavier Weights add Extras as per regular schedule.

Axle Grease—
See *Grease, Axle*

Axles— *Iron or Steel*
Concord, Loose Collar...4¼@4¾¢
Concord, Solid Collar...4¾@5¼¢
No. 1 Common, Loose...3¼@3¾¢
No. 1½ Com., New Style3¾@4¼¢
No. 2 Solid Collar.....4@4½¢
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18.....75&10@75&10&5%
Nos. 19 to 22.....75&10@75&10&5%

Boxes, Axle—
Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait— Fishing—
Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances— Sash—
Caldwell new list.....50%
Pullman .....50&10@60%

Spring—
Spring Balances.....60@60&5%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars— Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¾@3¼¢

Towel
No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—
Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—
Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned...℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (S. S. & Co.).℔ gro. net, $6.00

Bellows—
Blacksmith, Standard List.. 60&10@70&10%

Blacksmiths'—
Inch.. 30 32 34 36 38 40
Each.$3.25 3.50 4.00 4.50 5.00 5.75
Extra Length:
Each.$3.75 4.25 4.75 5.25 6.00 7.00

Hand—
Inch... 6 7 8 9 10
Doz...$4.50 5.00 5.50 6.00 6.50

Molders—
Inch. 9 10 11 12 14
Doz.$8.00 9.00 10.50 12.50 14.50

Net Prices.

Bells— Cow—
Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—
Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—
Hand Bells, Polished, Brass.. 60&5@60&10&5%
White Metal.....60%
Nickel Plated....50&10@50&10&5%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@33⅓
Silver Chime.....33⅓@35%

Miscellaneous—
Farm Bells.....lb. 2¼¢
Steel Alloy Church and School 50&10&5@60&5%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting— Leather—
Extra Hvy, Short Lap.60@60&5%
Regular Short Lap...65&10@70%
Standard .....70&5@70&10%
Light Standard.....70&10@75%
Cut Leather Lacing.....60&10%
Leather Lacing Sides, per sq. ft. 17½@18¢

Rubber—
Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....65&70%
Extra .....60&5@60&10%
High Grade.....50&5@50&10%

Bench Stops—
See *Stops, Bench*

Benders and Upsetters, Tire—
Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters 20%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.

Bicycle Goods—
John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks— Tackle—
Common Wooden....70&10@75&5%
Hartz St. Tackle Blocks.....50&50&5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50&10%
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron.....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—
Zinc, Crystal, &c...30&19@40&10%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—
Common Carriage (cut thread): ⅝ x 6 and Smaller.....75%
Larger and longer..65&10&2½%
Phila. Eagle,$3.00 list May 2½,'99 80%
Bolt Ends, list Feb. 14, '95..70&2½%
Machine, ⅝ x 4 and smaller 75&2½%
Machine, larger and longer.. 70&5%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knob:
Inch..... 3 4 5 6 8
Per doz.$0.30 .35 .45 .56 .75
Cast Iron Spring Foot, Jap'd:
Inch..... 6 8 10
Per doz.....$1.15 1.40 2.00
Cast Iron Chain, Flat, Japanned:
Inch..... 6 8 10
Per doz.....$0.95 1.25 1.55
Cast Iron Shutter, Japanned, Brass Knobs:
Inch..... 6 8 10
Per doz.....$0.80 .90 1.20
Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Stove and Plow—
Plow .....65&10@65&10&10%
Stove .....82½&10@82½&10&5%

Tire—
Common 80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80
Eagle Phila., list Oct. 16, '84....82½
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80
Eagle Phila., list Oct. 16, '84....82½
Eclipse, list Dec. 28, '99.....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—
Borers Tap, Ring, with Handle:
Inch..... 1¼ 1½ 1¾ 2
Per doz...$4.80 5.60 6.40 8.00
Inch 2¼ 2½
Per doz.....$5.65 11.50
Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—
C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection .....℔ doz. $30.00
Schatz 40%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—
Common Ball,American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60&10@65%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—
Wrought Steel...80&10@80&10&5%
Bradley's Wire Shelf:
Full cases.....80&10&10%
Broken cases.....80&10%
Griffin's Pressed Steel.....80%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—
See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—
Price per dozen.

	Quart	12	14
Water, Regular	*1.40*	*1.70*	*1.90*
Water, Heavy	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—
Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts— Brass—
Wrought, list Sept., '96.....30%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad....40&10@50%
Fast Joint, Narrow....40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70&10@75%
Parliament Butts.....70&10@75%

Wrought Steel—
Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 65%
Japanned Ball Tip Butts.. 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10%

Ex., 10& 10@ 10& 10&5%

Cages, Bird—
Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....40&10%

Hendryx Bronze:
.00 to 00 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb.4¢@4¼¢
Sharp, 1 prong...per lb., 4½@4¾¢
Cautier, Blunt.....4@4¼¢
Cautier, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....₱ lb 3.65¢
Perkins', Sharp Toe.....₱ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:

3	5	10 gal.
$18.00	60.00	129.60 gro., net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd.$1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—

Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—

American Coil, Straight Link:
3-16 ¼ 5-16 ⅜ 7-16 ½ 9-16
7.40 5.10 4.15 3.45 3.30 3.20 3.15
⅝ ¾ ⅞ 1 to 1¼ inch.
3.10 3.00 2.95 2.95 per 100 lb.
German Coil.....60&10&10@70%

Halters and Ties—

Halter Chains...60&10@60&10&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Cow Ties.....60@60&10%

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring.$23.50
6½—6-2, Str'ght, with ring.$24.50
6½—8-2, Str'ght, with ring.$28.00
6½—10-2, Str'ght, with ring.$32.00
NOTE.—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Trace, Wagon and Fancy Chains.....60&5@60&10&5%

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60&10@60&10&5%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10&5%
Gal. Pump Chain.....lb. 5@5¼%
Covert Mfg. Co.:
Breast.....40&2%
Halter.....40&2%
Heel.....40&2%
Rein.....40&2%
Stallion.....40&2%
Covert Sad. Works:
Breast.....70%
Halter.....70%
Hold Back.....70%
Rein.....70%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Eureka Coil and Halter....45@50&5%
Niagara Coil and Halter....45@50&5%
Niagara Cow Ties.....45&5@50&10&5%
Niagara Wire Dog Chains..45@50&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 35@38¢
Carpenters' Red.....gro. 30@33¢
Carpenters' White.....gro. 25@28¢
See also Crayons.

Checks, Door—

Bardsley's.....45%
Columbia.....50&10%
Eclipse.....60&10%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools.....40%
Gentlemen's Chests, with Tools..30%
Farmers' Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—

Socket Framing and Firmer

Standard List.....70&10@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....70%
L. & I. J. White.....30@30&5%

Tanged—

Tanged Firmers....40&5@40&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White, Tanged.....25&5%

Cold—

	lb.
Cold Chisels, good quality	*15@15¢*
Cold Chisels, fair quality	*11@12¢*
Cold Chisels, ordinary	*9@10¢*

Chucks—

Beach Pat., each $8.00.....35&5%
Pratt's Positive Drive.....25%
Empire.....25%
Blacksmiths'.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat., 0, 1, 2.35%
Drill Chucks, Skinner Pat., 3, 4, 5, 6, 7, 8.....35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—

Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10
Carriage Makers', P. S. & W. Co..50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—

Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....45%

Sidewalk—

Star Socket, All Steel..₱ doz. $4.05 net
Star Shank, All Steel..₱ doz. $3.24 net
W. & C. Shank, All Steel, ₱ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—

Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....33⅓@33⅓&10%
L. & I. J. White.....30%

Clippers—

Chicago Flexible Shaft Company:
'98 Chicago Horse.....$8.75 } 15%
1902 Chicago Horse.....10.75 }
20th Century Horse, each, $5.00...20%
Lightning Belt.....$15.00 } 15%
Chicago Belt.....$20.00 }
Stewart's Patent Sheep, $12.75....20%

Finger Nail Clippers—

Smith & Hemenway Co.₱ doz. net $2.00

Clips, Axle—

Eagle, 5-16 and ⅜ in..75@75&10%
Norway, 5-16 and ⅜ in..60&10@70%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....70&10@75%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—

Metal Stamping Co.....40%

Mane and Tail—

Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.

Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory.	*Nested.*	*Not nested.*
A Eastern	*75&5%*	*75%*
B, Eastern	*75&10%*	*75&5%*
Central	*75&5%*	*70&10&5%*
Southern	*70&7½%*	*70&2½%*
S. Western	*70&5%*	*70%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal.	each..	2	3	4	6	8
Labrador		$1.20	$1.50	$1.80	$2.10	$2.70
Gal.		3	4	5	6	8
Iceland, ea.		$1.80	$2.10	$2.40	$3.00	
Gal.		2	3	4	6	8
Galv. Lined, ea.		$1.85	$2.00	$2.25	$2.90	$3.90

25%

Gavl. Lined, side handles,

Gal.	2	3	4	6	8
Each.	$1.95	$2.15	$2.40	$3.30	$4.15..25%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided White, Com.lb.,21@22½¢
Cable Laid Italian..... lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted..11@17¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: Braided Cotton, Old Glory, Nos. 7 to 12....₱ lb 28 ¢
Anniston, Nos. 7 to 12...₱ lb 22 ¢
Old Colony, Nos. 7 to 12..₱ lb 22 ¢
Anniston Drab, Nos. 7 to 12..₱ lb 26 ¢
Pearl Braided, cotton, No. 6, ₱ lb, 22½¢; No. 7, 21½¢; Nos. 8 to 12, 21¢
Eddystone Braided, Nos. 7, 8, 9 and 10.....₱ lb 24 ¢
Eddystone Braided Cotton, No. 6..₱ lb 25 ¢
Harmony Cable Laid Italian, Nos. 7 to 10.....₱ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....₱ lb 40 ¢
Braided, Italian Hamp....₱ lb 40 ¢
Braided, Linen.....₱ lb 55 ¢
Braided, White Cotton or Spot....₱ lb 35 ¢
Massachusetts, White.....₱ lb 28 ¢
Massachusetts, Drab.....₱ lb 32 ¢
Phoenix, White, Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.
Silver Lake:
A quality, Drab.....40 ¢
A quality, White.....35 ¢
B quality, Drab.....35 ¢
B quality, White.....30 ¢
Italian Hemp.....40 ¢
Linen.....57½ ¢

Wire, Picture—

List Oct., '00.....85¢10¢10@85¢10¢10¢5%
Hendryx Standard Wire Picture Cord, 85&10&5%

Cradles—

Grain.....40¢12½%

Crayons—

White Round Crayons, gr. 5½@6¢
Cases, 100 gro., $4.00, at factory.
D. M. Steward Mfg. Co.:
Jumbo Crayons.....gr. $3.50
Metal Workers' Crayons, gr. $2.50
Soapstone Pencils, round, flat or square.....gr. $1.50
Rolling Mill Crayons.....gr. $2.50
Railroad Crayons (composition) gr. $2.00
Case lots, 20%
Zelnicker's Lumber:
Red, Blue, Green.....₱ gro. $6.50
Black.....₱ gro. $4.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....₱ doz. $7.00
Fort Madison, Light.....₱ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..₱ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....₱ doz. $3.00
Wm. Rogers & Son.....₱ doz. $2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....25@25&7½%

Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's.....₱ doz. 30&10@40%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....₱ doz. 33⅓@40%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....40%
New Triumph No. 605, ₱ doz. $24.00..30&10@40%
Russwin Food, No. 1, $24.00; No. 2 $27.00.....45&10&10%
Woodruff's.....₱ doz. 30&10@40%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12.....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....₱ doz. $3.00
Combined Slaw Cutter and Corn Grater.....₱ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..₱ gr. $18@$20
Slaw Cutters, 2 Knife..₱ gr. $22@$36

Tobacco—

All Iron, Cheap..doz. $1.25@$1.50
Enterprise.....25@30%
National, ₱ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ₱ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—

Appleton's, ₱ doz., $16.00.....50&10&10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..per doz..$9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....₱ doz. $6.25
Iwan's Perfection Post Hole Digger..₱ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....₱ doz. $7.25
Kohler's Universal.....₱ doz. $15.00
Kohler's Little Giant.....₱ doz. $12.60
Kohler's Hercules.....₱ doz. $10.00
Kohler's Invincible.....₱ doz. $9.00
Kohler's Rival.....₱ doz. $8.00
Kohler's Pioneer.....₱ doz. $7.20
Never-Break Post Hole Diggers, ₱ doz., $24.00.....60%
Samson, ₱ doz. $34.00.....25%

Dividers—See *Compasses.*

Doors, Screen—

Phillips', style E, 7⅞ in....₱ doz. $10.00
Phillips', style 077, 7⅞ in....₱ doz. $7.50
Phillips', style x-y, 7⅞ in....₱ doz. $10.50

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₱ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40&5%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....33⅓%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Bit Stock.....60&10&10@70%
Taper and Straight Shank..... 60&10@60&10&5%

Drivers, Screw—

Screw D'ver Bits, per doz..45@60¢
Balsey's Screw Holder and Driver, ₱ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....40%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40&10%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21....5&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Never Turn.....60%
New England Specialty Co.....50%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65%
No. 86.....25%
Victor.....55%
Defiance.....10%
Swan's:
Nos. 65 to 68.....50%
No. 40.....40&10%
Nos. 25, 35 and 45.....20&10&10%

Eave Trough, Galvanized—

Territory.	*L. C. L.*
A, Eastern	*80&7½%*
B, Eastern	*80&12½%*
Central	*80&7½%*
Southern	*70&20&10%*
S. Western	*75&12½%*

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments:
Plain Rd., and Rd., Cor., 2, 3 and 4 in.....75%
Plain Rd., and Rd., Cor., 5 and 6 in.....60%
Perfect Elbows (S., S. & Co.).....40%

Emery, Turkish—

	½ to ⅝	*¾ to 1*	*1¼ to 1½ Flour*
Kegs.....lb.	*5 ¢*	*5½ ¢*	*3½ ¢*
½ Kegs.....lb.	*5½ ¢*	*5¾ ¢*	*3¾ ¢*
¼ Kegs.....lb.	*5½ ¢*	*6 ¢*	*4 ¢*
10-lb. cans, 10 in case....	*6½ ¢*	*7 ¢*	*6 ¢*
10-lb. cans, less than 10.....	*10 ¢*	*10 ¢*	*8 ¢*
Less quantity..	*10 ¢*	*10 ¢*	*8 ¢*

NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's.....30&10%
Walling's.....45%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50@50&10%
Metallic Key, Leather Lined..60&10@70%
Red Cedar.....40&10@50%
Petroleum.....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star.....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined...50%
John Sommer's Reliable Cork Lined..50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ¾ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—

See *Plates, Felloe.*

Files— Domestic—

List revised Nov. 1, 1899.
Best Brands.....70&10@75&5%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103.....$4.00
Special, No. 104.....$4.00
Fusible Links.....$0.25
Expansion Bolts.....50&10%

Grindstone—

Net Prices:

Inch	15	17	19	21	24
Per doz.	$2.15	2.85	3.25	3.75	4.50

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's.....70%
Stowell's Giant Grindstone Hanger..℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy.....50&10&10%
Stowell's Grindstone Fixtures, Light..60&10%

Fodder Squeezers—

See *Compressors.*

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—

White, S'g't Bar, per doz..75@80¢
Red, S'g't Bar, per doz...$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	$1.25	$1.60	$1.90	$2.20	$2.80

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*

Hemp.....$2.75
Cotton.....3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
10&2½%

Gates, Molasses and Oil—

Stebbins' Pattern.80&10@80&10&5%

Gauges—

Marking, Mortise, &c......50&10&5@50&10&10&5%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....30&10%

Gimlets— Single Cut—

Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.30; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window

See *Trade Report.*

Glasses, Level—

Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—

Bottles or Cans, with Brush..25@50%
Cans (½ pts., pts., qts., ½ gal., gal.).....25@48%
International Glue Co. (Martin's)...40&10%

Grease, Axle—

Common Grade....*gro. $4.50@5.50*
Dixon's Everlasting..10-℔ pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00

Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—

Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00
Pike Mower and Tool Grinder, each.....$6.00
33⅓%
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.25

Halters and Ties—

Covert Mfg. Co.:
Web.....45%
Jute Rope.....50&5%
Sisal Rope.....35&5%
Cotton Rope.....45&2%
Hemp Rope.....45&2%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties.70%
Sisal Rope Ties.....60&10%

Hammers—
Handled Hammers—

Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox.....40&10&5%
Fayette R. Plumb:
Plumb, A. E. Nail.....33⅓&7⅓@33⅓&10&7⅓%
Engineers' and B. S. Hand..50&7⅓&5@50&10&7⅓&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'.....40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—

Under 3 lb., per lb. 50¢.....80&10&10@85%
3 to 5 lb., per lb. 40¢.....80&10&10@85%
Over 5 lb., per lb 30¢..85@85&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles

Axe, Pick, &c.....60&5@60&10&5%
Hoe, Rake, &c......45@50&5%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50&5%
D Handles.....40%

Cross-Cut Saw Handles—

Atkins'.....40&5%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—

Auger, assorted...*gro. $2.50@2.85*
Brad Awl.....*gro. $1.65@1.85*
Chisel Handles:
Apple Tanged Firmer, gro. assorted.....$2.40@2.65
Hickory Tanged Firmer, gro. assorted.....$2.15@2.40
Apple Socket Firmer, gro. assorted.....$1.75@1.95
Hickory Socket Firmer, gro. assorted.....$1.45@1.60
Hickory Socket Framing, gro. assorted.....$1.60@1.75
File, assorted.....gro. $1.30@1.40
*Hammer, Hatchet, Axe, &c.*60&10@60&10&10%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel.....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles.....15&10%
Nicholson Simplicity File Handle....℔ gro. $0.85@$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Single Doz.	$0.90	1.25	1.80	1.95	2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch	3	4	5	6
Single Doz.	$1.30	1.85	2.50	3.00

Allith Mfg. Co.:
Reliable, No. 1.....per doz. $8.00
Reliable, No. 2.....per doz. $9.60
Chicago Spring Butt Co.:
Friction.....25%
Oscillating.....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator.....30%
Railroad.....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10&5%
Roller Bearing.....75&5%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.60&10&2½%
Hinged.....net $6.40
Covered.....60&10%
Special.....70&5%
Lawrence Bros.:
Advance.....60&10%
Cleveland.....70&5%
Clipper, No. 75.....60%
Crown.....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant.....60&5%
Hummer.....70&5%
New York.....60&10%
Peerless.....70&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.15
Ball B'r'g St'l Track No. 10..$2.40
Roller B'r'g St'l Track No. 12.$2.30
Ball B'r'g St'l Track No. 13.$2.40
Roller B'r'g St'l Track No. 14.$2.30
Hero, Adj. Track No. 19.....50%
Adjustable Track Tandem Trolley Track No. 16.....50%
Seal, Steel Track No. 8.....$2.40
Auto Adj. Track No. 22..40&10%
Trolley B. D. No. 17.....$1.40
Trolley F. D. No. 120.....$2.35
Trolley F. D. No. 121.....$2.45
Trolley F. D. No. 150.....$2.60
Safety Underwriters F. D. No. 101.....$2.25
Tandem No. 44.....70&5%
Trolley F. D. No. 151.....$3.00
Palace, Adjustable Track No. 132.....40&10%
Royal, Adjustable Track No. 122.....40&10%
Ives' Wood Track No. 1.....$2.15
Trolley B. D. No. 20.....$1.35
Trolley B. D. No. 24.....$1.45
Trolley B. D. No. 27.....$1.50
Trolley B. D. No. 28.....$1.66
Roller Bearings Nos. 39, 40, 41, 43, 44.....70&5%
Anti-friction No. 42.....60&10%
Hinged Tandem No. 48.....60%
Folding Door B. B. Swivel No. 135.....30%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas.....60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator.....40%
Express.....50%
Freight Car Door.....60%
Interstate.....60&10%
Lundy Parlor Door.....50&10%
Magic.....60%
Matchless.....60&10%
Nansen.....70&5%
Parlor Door.....50&10%
Railroad.....50&10%
Rex Hinge Door.....80%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle.....70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot.....60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing.....60&10%
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing,...60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet.....50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing.....40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge, Ball Bearing.....40%
For Track, see Rail.

Extra 10% often given.

Hangers— Garment—

Pullman Trouser, No. 1....℔ gro. $9.00
Pullman Trouser, No. 4....℔ gro. $24.00
Victor Folding.....℔ gro. $9.60
Western, W. G. Co.....70&10%

Gate—

Myers' Patent Gate Hangers, ℔ doz. net.....$4.50

Hasps—

McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—

Regular list, first quality.40&7½%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—

Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	1	3	5
Doz. pair	$0.75	1.35	2.70

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	1	1½	2	2½
Doz. pair	$0.70	.65	.60	.55

Mortise Reversible Shutter (Buffalo, &c.):

No.	1	1½	2
Doz. pair	$0.70	.65	.60

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Parker.....70@75%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11 and 13..75%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55.....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5....75&10&5%
Tip Pat'n, Nos. 1, 3 & 5...75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with L'Ves.	$2.00	2.70	5.00
Hinges only.....	1.40	2.05	3.80
Latches only.....	.70	.70	.35

New England:
With Latch.....*doz.*...@$2.00
Without Latch...*doz.*...@$1.60
Reversible Self-Closing:
With Latch.....*doz.*...@$1.75
Without Latch...*doz.*...@$1.35
Western:
With Latch.....*doz. $1.75*
Without Latch.....*doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—

Holdback Cast Iron.....*gro. $9.00@$9.50*
Non-Holdback, Cast Iron.....*gro. $8.00@$8.50*

J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges.....40%
Bommer Spring Hinges.....40%
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge.....50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American.....30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.50
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges.....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....$9.00
Chief Ball B'r'g Floor Hinge.50%
Ohio Detachable Screen Door Hinge.....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k.℔ gro. pr.$

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap...75&5%
Cor. Ex. Heavy T.70&10%
Extra 10@10&5%

Screw Hook and Strap.
6 to 12 in..lb. 3½¢
1½ to 20 in..lb. 3¼¢
22 to 36 in..lb. 3 ¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6 ¢
¼ inch.....lb. 7 ¢
½ inch.....lb. 9 ¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers....35%

Hods— Coal—

	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons, Etc.—

Cleveland Wire Spring Co.:
Steel Mortar.....each $1.45
Steel Brick.....each $1.10

Hoes— Eye—

Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....35%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6¼ in.....$3.35
Acme Wedding.....₱ doz. net, $4.35
W. & C. L'ning Shuffle Hoe,₱doz.$4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

Door—

Empire.....50%
Bardsley's.....45%

File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

Hooks—Cast Iron—

Bird Cage, Reading.....60%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List.....50&10&10%
Clothes Line, Reading List.....60&10%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....66⅔%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&5%
Atlas, Coat and Hat:
Single Cases.....75%
10 Case Lots.....75&10%
Columbian Hdw. Co., Gem.....60&10%
Parker Wire Goods Co., King..75&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....70&10%
Czar.....65%
V Brace.....70&10%
Czar Harness.....50&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see *Stops, Bench.*
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, beat, all sizes, per doz.$1.50
Grass, common grades, all sizes, per doz.....$1.30
Whiffletree.....lb. 5¾@6¢
Hooks and Eyes:
Brass.....60&10&5@60&10&10%
Malleable Iron..70&10@70&10&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....35%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See *Nails, Horse.*

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....ft. 5 @ 6 ¢
3-ply Standard.....ft. 8 @ 9 ¢
4-ply Standard.....ft. 10 @11 ¢
3-ply extra.....ft. 11 @13 ¢
4-ply extra.....ft. 14 @16 ¢
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 8 @ 9 ¢
Fair Quality.....ft. 10 @11 ¢

Irons— Sad—

From ¼ to 10.....lb. 3¾@3 ¢
B. B. Sad Irons.....lb. 3¼@3½¢
Chinese Laundry....lb. 4¾@5 ¢
Chinese Sad.....lb. 4 @4¼¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	62	59	72	69
Tin'd Tops	65	62	75	72

New England Pressing..lb. 3¾@4¢

Pinking—

Pinking Irons.....doz. 50@60¢

Soldering—

Soldering Coppers, 2½ & 3.20@21¢
1½ & 2.....22@23¢

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&5%
Steel.....45&2%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&5%
Richards' Tiger Steel, No. 130.....40%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Smith & Hemenway Co.....40&10%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....70&10@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....70&10&2½%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge..per doz.$5.25@5.50
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

Mincing—

Buffalo.....₱ gro. $13.00

Miscellaneous—

Farriers'.....doz. $3.00@3.25
Wostenholm's.....₱ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber tip.....gro.$1.15@1.20
Carriage, Jap., all sizes..... gro. 40@45¢
Door, Mineral.....doz. 65@70¢
Door, Por. Jap'd.....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....40%
Climax Shelf, No. 113.....40%
Trolley, No. 109.....40%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0..... doz. $1.25@4.85
Lift Tubular, No. 0..... doz. $4.50@5.15
Hinge Tubular, No. 0..... doz. $4.50@5.15
Other Styles.....40&10@40&10&5%

Bull's Eye Police—

No. 1, 2¾-inch.....$2.50@2.75
No. 2, 3-inch.....$2.75@3.00

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—

Roggin's Latches, with screw.. doz. 35@40¢

Door—

Richards' Bull Dog, Heavy, No. 125.40%
Richards' Trump, No. 127.....50%

Leaders, Cattle—

Small.....doz. 59¢; large, 60¢
Covert Mfg. Co.....35%

Lifters, Transom—

R. & E.....33⅓%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.20*	*2.00*	*1.65*
75 feet	*$1.80*	*1.70*	*1.30*

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 9..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.: White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Anniston Waterproof Clothes, 50 ft., ₱ gro., $24.00; Gilt Edge, $22.00; Air Line, $22.00; Acme, $17.00; Alabama, $15.00; Empire, $14.00; Advance, $13.50; Oriole, $20.00; Albemarle, $13.50; Eclipse, $12.50; Chicago, $11.00; Standard, $10.00; Columbia, $8.50; Allston, $12.50; Calhoun, $11.00.

Locks— Cabinet—

Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....60&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron....75&10&5@80&8%
R. & E. Mfg. Co. Wrought Steel and Brass.....75@75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....60%

Machines—Boring—

Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Without Augers.

	Upright.	Angular.
R. & E. Mfg. Co.:		
Improved No. 3..	$4.25	No. 1..$5.00
Improved No. 4..	3.75	No. 2.. 3.38
Improved No. 5..	2.75	
Jennings', Nos. 1 and 4		35&5%
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Corking—

Reisinger Invincible Hand Power.... ₱ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—

Chandler's.....12½%

Washing—

Boss Washing Machine Co.: Per doz.
Champion Rotary Banner No. 1..$54.00
Standard Champion No. 1.....$48.00
Standard Perfection.....$36.00
Cinti Square Western.....$30.00
Uneeda American, Round.....$29.00

Mallets—

Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Apple-wood.....doz. 45&5@50%

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.).....10%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria..50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheap.....all sizes, $1.75@2.00
Good.....all sizes, $2.25@2.50

	10	*12*	*14*	*16*-in.
High Grade	*4.25*	*4.50*	*4.75*	*5.00*
Continental				60&5%
Great American				70%
Great American Ball B'r'g, new list				70%
Quaker City				70%
Pennsylvania				60&5%
Pennsylvania, Jr., Ball Bearing				60%
Pennsylvania Golf				50%
Pennsylvania Horse				33⅓&5%
Pennsylvania Pony				40&5%
Philadelphia:				
Styles M., S., C., K., T.				70&5%
Style A, all Steel				60&5%
Style E, High Wheel				70&10&5%
Drexel and Gold Coin, special list				50%

Nails—

Wire Nails and Brads, Papered, List July 20, 1899..85&10&10@90%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers' &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	25	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	.....35%
New Putnam	19	18	17	16	16	..10&10%
Western						₱ lb 8½¢

Jobbers' Special Brands..... per lb. 8½@10¢

Picture—

	1½	2	2½	3	3½ in.
Brass H'd	*.45*	*.55*	*.60*	*.70*	*.. gro*
Por. Head	*.. 1.10*	*1.10*	*1.10*	*..*	*gro*

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: Off list.
Mfrs. or U. S. Standard.
Square, Blank.....$4.80
Hexagon, Blank.....$5.30
Square, Blank, C. T. & R..$5.00
Hexagon, Blank, C. T. & R.$5.70
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.70
Square, Tapped.....$5.30
Hexagon, Tapped.....$5.60

Oakum—

Best or Government.....lb. 6½¢
Navy.....lb. 5 ¢
U. S. Navy.....lb. 6 ¢
Plumbers' Spun Oakum.....2½¢
In carload lots ¼¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, No. 1, $3.60; No. 2, $4; No. 3, $4.40; ₱ doz. 20%
Malleable, Hammers' Old Pattern, same list.....50&10%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can—

Per doz.
Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....$1.75@$3.00
National.....50%
Stowell's Sprague.....₱ doz. 35@45¢

Egg—

Nickel Plate.....₱ doz., $2.00
Silver Plate.....₱ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope.....lb. 1½@16¢

Rubber—

(Fair quality goods.)
Sheet, C. I.....8@10¢
Sheet, C. O. S.....9@13¢
Sheet, C. B. S.....10@1½¢
Sheet, Pure Gum.....50@65¢
Sheet, Red.....40@50¢
Jenkins' '96, ₱ lb 80¢.....25@25&5%

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute.....lb. 4@4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—

S. S. & Co., with gauges—No. 1, $6.25; No. 2, $6.50 ₱ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.60&10@60&10&12½%

Fry—

Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.80*	*0.90*	*1.10*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz	*$1.95*	*2.25*	*2.80*	*3.15*

Roasting and Baking—

Regal, S., S. & Co., ₱ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:

No.	40	50	60	140	150	160
	$30.00	35.90	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos: lb.
Building Felt.....2¾¢
Mill Board, sheet, 40x40 in..3½¢
Mill Board, roll, thicker than 1-16 inch.....3½¢
Mill Board, 1-16 inch thick and less.....2½¢
Per roll
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll 35@40¢
Medium weight, 30 lbs. to roll, 40@45¢
Heavy weight, 40 lbs. to roll.. 50@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$38.00@40.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.... $32.50@35.50
2 ply, roll 108 sq. ft.....55@60¢
3 ply, roll 108 sq. ft.....78@85¢
Slater's Felt (roll 500 sq. ft.) .75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.50&10@60%

Parers— Apple—

Advance .....₱ doz. $4.00
Baldwin .....₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy .....₱ doz. $4.00
Dandy .....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $5.25
Rocking Table.....₱ doz. $6.20
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00

Potato—

Saratoga .....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....70&5@75%
Cronk's Handled Garden Mattock, ₱ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass .....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.
Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings 75%

Pipe, Merchant—

Carload Lots.

	Steel. Blk.	Steel. Galv.	Iron. Blk.	Iron. Galv.
⅛ & ¼ in..	67½%	51½%	65½%	49½%
⅜ & ½ in..	71½%	59½%	69½%	57½%
¾ to 6 in..	75½%	65½%	74 %	64 %
7 to 12 in..	70½%	55½%	69 %	53½%

Pipe, Sewer—

Carload lots.
Standard Pipe and Fittings, 2 to 24 in.:
New England.....71%
New York and New Jersey.71%
Maryland, Delaware, E. Pa.78%
West. Pa. and West Va...80%
Virginia 76%
Ohio, Michigan and Ky....80%
Indiana 80%
NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding .....33⅓&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's 60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding .....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Union 60%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's .....60&10%
Union 60%

Plane Irons—

Wood Bench Plane Irons.....25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union 50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....₱ doz. $8.50

Plates—

Felloe .....lb. 3¾@4¼¢
Self-Sealing Pie Plates (S., S. & Co.), ₱ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers.....75&10@80%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.
Gas Pipe.. 7 8 10 12-in.
$2.00 $2.25 $3.00 $3.75
Acme Nippers.....50@50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's 60%
Improved Button.....60&10%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools..40&10@40&10&10%
P., S. & W. Tinners' Cutting Nippers .....30@30&10%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.: Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers,lb.8½@9 ¢
½-lb. papers.....lb.9 @9½¢
¼-lb. papers.....lb.9¾@10¼¢

Pokes, Animal—

Ft. Madison Hawkeye.....₱ doz. $3.25
Ft. Madison Western.....₱ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.72.....40%
Prestoline Paste.....40&10%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25; ₱ gro., $12.00.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75; ₱ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty, gr. $10.00.....50%
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 8¢
Fireside .....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese .....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....₱ doz. $1.00
Black Silk, 5 oz. box.....₱ doz. $0.75
Black Silk, ½ pt. liq.....₱ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. $9.00
1 qt., Round.....gro. $10.00
1½ qt., Square.....gro. $11.00
2 qt., Square.....gro. $13.00

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled 40%
Tinned 35%

Powder—

In Canisters:
Duck, 1 lb.....each 45¢
Fine Sporting, 1 lb....each 75¢
Rifle, ½-lb.....each 15¢
Rifle, 1-lb.....each 25¢
In Kegs:
12½-lb. kegs.....$2.50
25-lb. kegs.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)	14.00	17.00
Half case 12 (1 lb c. bk)	7.25	8.75

Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ₱ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops 50%
Miller's Falls, No. 3, ₱ doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Pelican, ₱ doz. $9.00.....40&10%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ₱ doz. $6.00
Diamond B, No. 3, case lots..... ₱ doz. $5.50
Giant No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....40%

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz.	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz.	$0.16	.19	.23	.30
Inch	1¾	2	2¼	2½
Side, doz.	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal .....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern .....60@60&10%
Pitcher Spout.....80@80&5%
Wood Pumps, Tubing, &c.45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $7.20
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list) .....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$7.20
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	2	2¼	2½	2¾
	$2.20	2.50	2.75	3.00
Inch...	3	3¼	3½	3¾	4
	$3.30	3.60	3.85	4.10	4.40

Plunger Cup Leathers—Per 100:

Inch...	2½	3	3½	4
	$2.75	3.85	5.00	6.00

Punches—

Saddlers' or Drive, good..... doz. 50@75¢
Spring, single tube, good quality .....$1.75@2.00
Revolving (4 tubes) ..... doz. $3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's No. 1 (A.B.C.), ₱ doz. $15.50.....50%
No. 2, ₱ doz. $22.50.....50%
Hercules, each $7.50.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co.35@35&5%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail—Barn Door, &c.—

Cast Iron Barn Door; Flange Screw Holes for Rd. Groove Wheels:

½	⅝	¾ in.	
$2.50	$3.00	$4.40	*100 feet.*

Angular for Sq. Groove Wheels:

Small.	*Med.*	*Large.*	
$2.00	$2.70	$3.60	*100 feet.*

Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Allith Mfg. Co.:
No. 1, Reliable Hgr. Track, ₱ ft. 5½¢
No. 2, Reliable Hgr. Track, ₱ ft. 7¢
Cronk's:
Double Braced Steel Rail....₱ ft. 3¢
O. N. T. Rail.....2¾¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₱ 100 ft., 1 in., $3.70; 1¼ in., $4.40.
O. N. T., ₱ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
₱ 100 ft. No. 201, $4.00; No. 202, $4.40.
New York, 1 x 3-16 in., ₱ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ₱ ft., 11¢..50%
None Better.....₱ ft. 3¾¢
Standard .....₱ ft. 4 ¢
Myers' Stayon Track.....60%
Richards' Mfg. Co.:
Common 1 x 3-16 in., $2.75; 1½ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail.....$4.40
Fire Door Track, ₱ ft., 2½ x ⅝, 15¢; 3½ x ⅝, 9¢.
Lag Screw Rail, No. 65.....40%
Gauge Trolley Track, ₱ ft., No. 31, 10¢; No. 32, 15¢; No. 33, 24¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard 60%
Stowell's:
Cast Rail.....₱ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in....₱ ft. 3¢
Wrought Bracket, 1¼ x 5-16..₱ ft. 7¢
Swett's Hylo, ₱ ft. 11¢.....60%
P. L. B. Steel Rail.....₱ 100 ft. $3.00
No. 0, 1 x 3-16.....₱ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ₱ doz., net.....$4.25
Cronk's:
New Champion Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00....75&25%
Queen City Lawn, ₱ doz., 20 teeth, $3.45; 24, $3.60.....
Anticlog Lawn, ₱ doz.....$4.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....₱ doz. $3.45
Lawn Queen, 24-tooth.....₱ doz. $3.60
Paragon, 20-tooth.....₱ doz. $2.75
Paragon, 24-tooth.....₱ doz. $3.00
Steel Garden, 14-tooth....₱ doz. $2.88
Malleable Garden, 14-tooth, ₱ doz. $1.75.....60%
Weldless Steel Garden.....75&5%

Rasps, Horse—

Disston's 75%
Heller Bros.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Borasic 60%
Fox Razors, No. 42..₱ doz. $20.00
Fox Razors, No. 44..₱ doz. $20.00
Fox Razors, No. 82, Platina.. ₱ doz. $25.00
Red Devil.....60%
Silberstein:
Carbo Magnet.....$18.00
Griffon, No. 65.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Silberstein 40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¾, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR..20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Black Jap 75%
Bronzed 75%

Revolvers—

Single Action.....95¢@$1.00
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....$2.00
Automatic $3.35
Hammerless $4.00
NOTE.—Jobbers frequently cut the above prices of manufacturers for small trade.

Riddles, Hardware Grade

16 in.....per doz. $2.25@$2.50
17 in.....per doz. $2.50@$2.75
18 in.....per doz. $2.75@$3.00

Rings and Ringers—

Bull Rings—

	2	2½	3 *inch.*
Steel	$0.70	0.75	0.80 *doz.*
Copper	$1.00	1.15	1.40 *doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₱ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... doz. 50@55¢
Hill's Ringers, Malleable Iron.. doz. 70@75¢
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper .....50&10@60%
Iron or Steel.....75@75&5%

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay.....75¢
Cronk's Brinkerhoff.....90¢
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.50%
O. K. Adj. and Reversible, No. 58.50%
Lag Screw, Nos. 55 and 57.....40%
Fire Door, No. 59.....40%
Favorite, No. 54.....40%
Stowell's Barn Door Stay..₱ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....₱ doz. 65¢
Hinge Adjustable Stay.....₱ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Pure .....lb..11¾@12¢
Sisal, 7-16 in. diam. and larger:
Mixed .....lb..8@8¼¢
Pure .....lb..9¼@9¾¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed .....lb. 8@8¼¢
Pure .....lb..9¼@9¾¢

Sisal, Tarred, Medium Lath Yarn:
Mixed ..... *lb.* 7¾¢
Pure ..... *lb.* 9@9¼¢
Cotton Rope: *Lb.*
Best, ¼-in. and larger ..... 16¢
Medium, ¼-in. and larger ... 14¢
Common, ¼-in. and larger . 10½¢
Jute Rope:
Thread No. 1, ¼-in. & up. lb. 6¼¢
Thread No. 2, ¼-in. & up, lb. 5¾¢
Old Colony Manila Transmission Rope ..... ℔ lb 17½¢

Wire Rope—

Galvanized ..... 42½&2½%
Plain ..... 50&2½%

Ropes, Hammocks—

Covert Mfg. Co.:
Jute ..... 50&5%
Sisal ..... 35&5%
Covert Saddlery Works ..... 60&5%

Rules—

Boxwood ..... 60&10&10%
Ivory ..... 35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35@35&10&10%
Miscellaneous ..... 50@50&10&10%
Combination ..... 55@55&10%
Stationers' ..... 10@10&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber 60%
Stanley R. & L. Co.:
Boxwood 62½%
Ivory 45%
Miscellaneous 60%
Zig Zag 40%
Zig Zag, Pin Joint 42½%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—

See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 50%
Band ..... 50&10@60%
Cross Cuts ..... 35&5%
Mulay, Mill and Drag 50%
One-Man Saw 40%
Wood Saws 40%
Hand, Compass, &c 40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&5%
Disston's:
Circular, Solid and Ins'ted Tooth. 50%
Band, 2 to 14 in. wide 60%
Band, ⅛ to 1⅝ 60%
Crosscuts 50%
Narrow Crosscuts 55%
Mulay, Mill and Drag 50%
Framed Woodsaws 35%
Woodsaw Blades 35%
Woodsaw Rods 25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination 30%
Compass, Key Hole, &c 25%
Butcher Saws and Blades 35%
C. E. Jennings & Co.'s:
Back Saws 25%
Butcher Saws 30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws 30%
Hand Saws ..... 30&2½%
Wood Saw Blades 35%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Peace & Richardson's Hand Saws..30%
Simonds':
Circular Saws 50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws. 50%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws ..... 35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws..40&10@50%
Butcher Saws Blades ..... 35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades 25%
Keystone 40%
Hack Saw Frames 30%
Fitchburg File Works, The Best...22%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.... 40&7¼%
Hack Saws, Nos. 175, 180, complete, 40&7¼%
Goodell's Hack Saw Blades 40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades 35%
Diamond Hack Saw Frames 50%
Star Hack Saws and Blades..... 15&10%
Sterling Hack Saw Blades 35%
Sterling Hack Saw Frames....30&10&5%

Scroll—

Barnes' No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $4.00 ..... 15&10%

Scalers, Fish—

Covert's Saddlery Works ..... 60&10%

Scales—

Family, Turnbull's .... 50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs. ..... *doz.* $5.50
Two Platforms, ½ oz. to 8 lbs. ..... *doz.* $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka 25%
Favorite 40%
Crocers' Trip Scales 50%
Chicago Scale Co.:
The "Little Detective" ....25 lbs 50%
Union or Family No. 2 ..... 60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list) .25@35%
"The Standard" Portables 50%
"The Standard" R. R. and Wagon..50%

Scrapers—

Box, 1 Handle ..... *doz.* $2.00@2.25
Box, 2 Handle ..... *doz.* $2.60@2.85
Ship .... *Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00 ..... 15%
Chapin-Stephens Co., Box....50@50&10%

Screens, Window and Frames—

Air Line Pattern Screens ..... 60&10%
Flyer Pattern Screens..60&10@60&10&5%
Maine Screen Frames ..... 40&10&5%
Perfection Screens ..... 60&10@60&10&5%
Phillips' Screen Frames...60&5@60&10%
See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1¼ .$3.50@3.75
Bench, W'd, Beech .doz. 30@30&5%
Hand, Wood ..... 30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—

Lag, Cone Point, list Oct. 1, '99 ..... 75&17½%
Coach, Gimlet Point, list Oct. 1, '99 ..... 75&12½%
Hand Rail, list Jan. 1, '81 .... 70&10@75%

Jack Screws—

Standard List ..... 75&10@80&5%
Millers Falls ..... 50&10&10%
Millers Falls, Roller ..... 50&10%
P., S. & W. ..... 50@50&5%
Sargent ..... 70&10%
Swett Iron Works ..... 75&10@80&5%

Machine—

List Jan. 1, '98:
Flat or Round Head, Iron .... 50@50&10%
Flat or Round Head, Brass .... 50@50&10%

Set and Cap—

Set (Iron or Steel) .80@80&10&10%
Sq. Hd. Cap ..... 75@75&10%
Hex. Hd. Cap ..... 75@75&10%
Rd. or Fillister Hd. Cap ..... 65@65&10%

Wood—

List July 23, 1903.
Manufacturers' printed discounts:
Flat Head, Iron .... 87½&10@... %
Round Head, Iron .. 85 &10@... %
Flat Head, Brass .... 85 &10@... %
Round Head, Brass .. 80 &10@... %
Flat Head, Bronze ... 77½&10@... %
Round Head, Bronze .75 &10@... %
Drive Screws ..... 87½&10%

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.

Prices announced for next season:
Clipper Pattern, Grass $6.20
Full Polished, Clipper $6.75
Grain $8.00
Clipper, Grain $8.25
Weed and Bush $6.25

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Aiken's Sets, Awl and Tools: No. 20, ℔ doz. $10.00 ..... 50&10&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
C. E. Jennings & Co.'s Model Tool Holders 30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5. $18....15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ℔ doz sets $9.00
Octagon ..... *gro.* $3.50@3.75
Buck Bros. 27½%
Cannon's Diamond Point, ℔ gro. $12..25%
Mayhew's ..... ℔ gro. $9.00
Snell's Cannon's Diamond Point.... ℔ gro. $7.20
Snell's Cor'gated, Cup Pt.... ℔ gro. $7.20
Snell's Knurled, Cup Pt.... ℔ gro. $7.20
Springfield Mach. Screw Co.: Diamond Knurled Cup Pt. ℔ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Aiken's:
Genuine ..... 50&10%
Imitation ..... 50&10%
Atkin's:
Criterion 40%
Adjustable 40%
Bemis & Call Co.'s:
Cross Cut 30%
Plate 20%
Disston's Star and Monarch 25%
Morrill's No. 1, $15.00 ..... 50%
Nos. 3 and 4, Cross Cut, $20.63.... 50%
No. 5, Mill, $30.00 ..... 50%
Nos. 10, 11, 95, $15.63.. ..... 50%
No. 1 Old Style, $10.00 ..... 50%
Special, $16.25 ..... 50%
Giant Royal, Cross Cut..... ℔ doz. $8.50
Royal, Hand ..... ℔ doz. $5.00
Taintor Positive ..... ℔ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ℔ doz., net, $24.00

Sharpeners, Knife—

Chicago Wheel & Mfg. Co. 65%

Shaves, Spoke—

Iron ..... *doz.* $1.10@1.25
Wood ..... *doz.* $1.75@2.25
Bailey's (Stanley R. & L. Co.)..... 45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co..... 30@30&10&10%
Goodell's, ℔ doz. $9.00 ..... 15&10%
Wood's F1 and F2 ..... 50%

Shears—

Cast Iron..	7	8	9 in.
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap .... 70@40&10%
Best quality, Nickel .. 60@60&10%
Fair quality, Jap .... 80@80&5%
Fail quality, Nickel .. 75@7*&10%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears 10%
Wilkinson's Hedge, 1900 list 45%
Wilkinson's Branch, Lawn & Border.40%
Wilkinson's Sheep, 1900 list 50%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 40&10@50%
Forged Handles, Steel Blades, Berlin, 40@40&10%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in 50%
Niagara Snips 40%
P., S. & W. Co 20%

Pruning Shears and Tools

Cronk's Grape Shears 33⅓%
Cronk's Pruning Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ℔ doz. $18.00 ..... 25%
Disston's Pruning Hook, ℔ doz. $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades..40@40&5%
Orange Shears ..... 50&10@50&20
Grape ..... 40&10@50
Tree Pruners 75%
P., S. & W. Co 33⅓%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
Patent Roller, Hatfield's, Sargent's list ..... 70&10%
Reading 60%
R. & E. list 33⅓%
Wrightsville Hatfield Pattern 80%

Sliding Shutter—

Reading list ..... 45&20%
R. & E. list 33⅓%
Sargent's list ..... 50&10%

Shells—Shells, Empty—

Brass Shells, Empty:
First quality, all gauges ..... 60&5%
Climax, Club, Rival, 10 and 12 gauge ..... 65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge..20%
Climax, Union, League, New Rival, 10 and 12 gauge 25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ($7.50 list)..20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge ..... 33⅓&5%
Robin Hood, Low Brass ..... 20&10%
Robin Hood, High Brass ..... 30&10%

Shells, Loaded—

Loaded with Black Powder..40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass 50%
Comets, High Brass ..... 50&10&5%

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg $4.00
Steel ..... per keg $3.75
Burden's, all sizes ..... ℔ keg $3.90

Shot—

Drop, up to B, 25-lb. bag $1.65
Drop, B and larger ..... *per 25-lb. bag,* $1.90
Buck, 25-lb. bag $1.90
Chilled, 25-lb. bag $1.90

Shovels and Spades—

Association List, Nov. 15, 1902..40%

Sieves and Sifters—

Hunter's Imitation ..... *gro.* $10.50@11.00
Hunter's Genuine ..... *per gro.* $12.00@12.50
Buffalo Metallic Blued, S. S. Co., ℔ gr.:

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ℔ doz., $2.00 ..... 20%

Sieves, Seamless Metallic

	Per dozen.			
Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch.
Mesh 18, Nested .... *doz.* $0.90@0.95
Mesh 20, Nested .... *doz.* $1.00@1.05
Mesh 24, Nested .... *doz.* $1.30@1.40

Sinks, Cast Iron—

Standard list ..... 60@60&10%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 80&10@80&10&10%
Steel ..... 40@40&10%

Slates, School—

Factory Shipments.
"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&5 tens
Victor A, Noiseless ..... 60&5 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby ..... 30&5&2%
High Grade 45%
Jockey ..... 30&10%
Trojan 45%
Yankee ..... 30&5&2%
Yankee Roller ..... 30&5&2%
Covert's Saddlery Works:
Crown 60%
German 60%
Model 60%
Triumph 60%
Oneida Community:
Solid Swivel 60%
Sargent's Patent Guarded....66⅔&10%

Snaths—

Scythe 50%

Snips, Tinners—See *Shears.*

Spoons and Forks—Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous—

German Silver ..... 60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver 50%

Tinned Iron—

Teas ..... *per gro.* 45@50¢
Tables ..... *per gro.* $0.90@1.00

Springs—Door—

Chicago (Coil) ..... 40&10%
Gem (Coil) 20
Pullman (Coil) 20
Reliance (Coil) ..... 40&10%
Star (Coil) 30
Torrey's Rod, 39 in. ..... ℔ doz. $1.10
Victor (Coil) ..... 50&10&10%

Carriage, Wagon, &c.—

1¼ in. and Wider:	*Per lb*
Black	4@4¼¢
Half Bright	4@4¼¢
Bright	4½@4¾¢

Painted Seat Springs:
1½ x 2 x 26 ..... *per pr.* 42¢
1½ x 3 x 28 ..... *per pr.* 70¢

Sprinklers, Lawn—

Enterprise ..... 25@30%
Philadelphia No. 1, ℔ doz. $12; No. 2, $15; No. 3, $24 ..... 30%

Squares—

Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron.. } 75@75&5%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2 ..... 50%

Squeezers, Lemon

Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap ..... *doz.* $1.00
Good Grade ..... *doz.* $1.25
Tinned Iron ..... *doz.* $0.75@1.25
Iron, Porcelain Lined ... *doz.* $1.75

Staples—

Barbed Blind ..... *lb.* 6@6½¢
Electricians', Association list .. 80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized $2.55
Poultry Netting Staples ..... *per lb.* 3½@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—

Dick's 30%
Foster Bros.' 30%
C. & A. Hoffmann's 40%

Steelyards — .... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates 25%
Gardner Die Stocks No. 1 ..... 50%
Gardner Die Stocks, larger sizes....40%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plates 25%

Stone—Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ℔ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ..... ℔ gro. $9.00
One gross or more ..... ℔ gro. $7.20
Lots of 10 gross or more..℔ gro. $6.00

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ℔ gro. $12.00
Lamoille S. S., ℔ gro. $11.00
White Mountain S. S., ℔ gro. $9.00
Green Mountain S. S., ℔ gro. $6.00
Extra Indian Pond S. S., ℔ gro. $7.50
No. 1 Indian Pond S. S., ℔ gro. $7.00
No. 2 Indian Pond S. S., ℔ gro. $4.50
Leader Red End S. S., ℔ gro. $4.50
Emery and Corundum, 10 in., ℔ gro. $9.00
Pure Corundum, 10 in., ℔ gro. $12
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

Oil Stones, &c.—

Chicago Wheel & Mfg. Co., 1901 list:
Gem Corundum Oil, Double Grit..50%
Gem Corundum Axe, Single or Double Grit..... 55%
Gem Corundum Slips..... 55%
Gem Corundum Razor Hones..... 50%
Pike Mfg. Co., 1901 list: ℔ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in.. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in, 40¢
Washita St., No. 2, 4 to 8 in. 30¢
Lily White Slips..... 90¢
Rosy Red Slips..... 90¢
Washita Slips, Extra..... 80¢
Washita Slips, No. 1..... 70¢
Washita Slips, No. 2..... 40¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit..... 33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit..... 33⅓%
Quickcut Emery Rubbing Bricks. 33⅓%
Hindostan No. 1, R'g'lar. ℔ lb 8¢
Hindostan No. 1, Small.. ℔ lb 10¢
Axe Stones (all kinds)..... 33⅓%
Turkey Oil Stones, Extra, 5 to 8 in..... ℔ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips..... 40¢
Sand Stone..... 6¢
Belgian, German and Swaty Razor Hones 50%
Natural Grit Carving Knife Hones ..... ℔ doz. $3.00
Quick Edge Pocket Knife Hones ..... ℔ doz. $2.50 40%
Mounted Kitchen Sand Stone, ℔ doz. $1.50

Stoners, Cherry—

Enterprise ..... 25@30%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00..... 50%
Morrill's, No. 2, $12.50..... 50%

Door—

Chapin-Stephens Co..... 60@60&10%

Plane—

Chapin-Stephens Co..... 20%

Straps— Box—

Cary's Universal, case lots..20&10&10%

Hame—

Covert's Saddlery Works..... 60&10%

Stretchers, Carpet—

Cast Iron, St'l Points, doz. 55@60%
Socket ..... doz. $1.75
Excelsior Stretcher and Tack Hammer Combined, ℔ doz. $6.00..... 20%

Stuffers, Sausage—

Enterprise Mfg. Co..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%

Sweepers, Carpet—

National Sweeper Co.: ℔ doz.
Auditorium, Roller Bearing (26 in. case), Nickel..... $54.00
Mammoth, Roller Bearing (30 in. case), Nickel..... $60.00
Marion, Roller Bearing, regular finishes, full Nickel..... $24.00
Marion Queen, Roller Bearing, full Nickel $24.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller B'r'g, Jap'ned. $20.00
Transparent, Roller Bearing, Plate Glass Top, Nickel..... $36.00
Monarch Extra, Roller Bearing, (17-in. case), Nickel..... $36.00
Monarch Extra, Roller Bearing (17-in. case), Japanned..... $33.00
National Queen, Fancy Veneers. $27.00
Perpetual, Regular B'r'gs, Nkl.. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Triple Medal..... $24.00
NOTE.—Rebates: 50¢ per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots. $2.50 per dozen on twenty-five-dozen lots.

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks..... 90&25&5@..%
American Cut Tacks. 90&20&5@..%
Swedes Cut Tacks.. 90&33&5@..%
Swedes Upholsterers' Tacks..... 90&40&5@..%
Gimp Tacks..... 90&15&5@..%
Lace Tacks..... 90&15&5@..%
Trimmers' Tacks... 90&33&5@..%
Looking Glass Tacks.. 65&5@..%
Bill Posters' and Railroad Tacks ..... 90&15&5@..%
Hungarian Nails.... 80&20&5@..%
Common and Patent Brads... 80&10&5@..%
Trunk and Clout Nails. 80&10@..%
NOTE.—The above prices are for Straight Weights. An extra 5% is given on Star Weights** and an extra 10&5% on Standard Weights.****

Miscellaneous—

Double Pointed Tacks..... 90&6 or 7 cns
Steel Wire Brads, R. & E. Mfg. Co.'s list ..... 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, S., S. & Co.....30-gal.	$3.40
Emerald, S., S. & Co.....60-gal.	$4.25
Queen City, S., S. & Co....30-gal.	$3.65
Queen City, S., S. & Co....60-gal.	$4.50

Tapes, Measuring—

American Asses' Skin..40&10@50%
Patent Leather..... 25@30&5%
Steel ..... 40@40&10%
Chesterman's ..... 25@25&5%
Eddy Asses' Skin..... 40&10@50%
Eddy Patent Leather..... 25@30&5%
Eddy Steel..... 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list..... 35@35&5%
Pocket ..... 35@35&5%
Lufkin's:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather....25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $3.00

Thermometers—

Tin Case..... 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop..... 80&2½%
Monitor, Cross Head, &c.... 70%

Brick Ties—

Niagara Brick Ties..... 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works..... 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White..... 20@20&5%

Hay—

Myers' Hay Tools..... 50%
Stowell's Hay Carriers..... 50%
Stowell's Hay Forks..... 50%
Stowell's Fork Pulleys..... 50%

Saw—

Atkins' Cross Cut Saw Tools..... 40%
Simonds' Improved..... 33⅓%
Simonds' Crescent..... 25%

Ship—

L. & I. J. White..... 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro..... $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Oneida Pattern..75&10@75&10&5%
Newhouse ..... 45@45&5%
Hawley & Norton..... 65%
Victor and Oneida.....70&10@70&10&5%
O. C. Jump (Blake Pat.)..60&5@60&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ℔ doz. $13.25
No. 3, Rat, ℔ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ℔ doz. $5.25; case of 72 ℔ gro. $4.70 doz.
No. 4, Mouse, ℔ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ℔ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E 1..... 50%

Trowels—

Disston Brick and Pointing..... 30%
Disston Plastering..... 25%
Diston "Standard Brand" and Garden Trowels..... 35%
Kohler's Steel Garden Trowels, 5 in. ℔ gro. $4.80
Kohler's Steel Garden Trowels, 6 in. ℔ gro. $6.00
Never-Break Steel Garden Trowels.. ℔ gro. $6.00
Rose Brick and Plastering..... 25&5%
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz. $15.00
Daisy Stove Trucks, Improved Pattern ..... ℔ doz. $18.50
McKinney Trucks..... each $10.00
Model Stove Trucks..... ℔ doz. $18.50

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$4.75*	*5.25*	*6.00*

Galvanized Wash Tubs (S., S. & Co.):

	No. 1	2	3	10	20	30
Per doz., net.	$5.70	6.30	7.20	6.60	7.20	8.10

Twine, Miscellaneous—

	BC.	B.
Flax Twine:		
No. 9, ¼ and ½-lb. Balls.	*22@24¢*	
No. 12, ¼ and ½-lb. Balls.	*18@20¢*	
No. 18, ¼ and ½-lb. Balls.	*16@18¢*	
No. 24, ¼ and ½-lb. Balls.	*16@18¢*	
No. 36, ¼ and ½-lb. Balls.	*15@17¢*	
Chalk Line, Cotton Balls ..... ½-lb. 30¢		
Cotton Mops, 6, 9, 12 and 15 lb. to doz ..... 9½@11¢		
Cotton Wrapping, 5 Balls to lb., according to quality.. 13½@20¢		
American 2-Ply Hemp, ¼ and ½-lb. Balls ..... 13@14¢		
American 3-Ply Hemp, 1-lb. Balls ..... 13@14¢		
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) ..... 8½¢		
India 3-Ply Hemp, 1-lb. Balls..8½¢		
India 3-Ply Hemp, 1½-lb. Balls. 7@8¢		
2, 3, 4 and 5-Ply Jute, ½-lb. Balls ..... 9@10¢		
Mason Line, Linen, ½-lb. Bls..46¢		
No. 2½ Mattress, ¼ and ½-lb. Balls ..... 57¢		
Wool, 3 to 6 ply....B 4¾¢; A 5¢		

Vises—

Solid Box.....60&10@60&10&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co..... 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50; No. 3, $10.00.
Machinist and Tool Makers' No. 4, $12.50; No. 5, $7.00; No. 6, $10.00; No. 10, $21.50.
Jewelers' No. 7..... $4.00
Fisher & Norris Double Screw..15&10%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co..... 20@30%
Merrill's 20%
Millers Falls..... 60&10%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip..... 20%
Parker's:
Victor ..... 20@25%
Regulars ..... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Sargent's 40%
Smith & Hemenway Co.:
Machinists' 40%
Jewelers' 33⅓%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers—

Disston's D 3 Clamp and Guide, ℔ doz. $30..... 25%
Perfection Saw Clamps, ℔ doz....$5.00
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3..... 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip..... 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise ..... 60&10%
Holland's Combination Pipe..60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe:
87 Series..... 60%
187 Series..... 60&5%
No. 870..... 40%

Wads—*Price per M.* Dis. 15%

B. E., 11 up..... 60¢
B. E., 9 and 10..... 70¢
B. E., 8..... 80¢
B. E., 7..... 80¢
P. E., 11 up..... $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20....$3.00@3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 50@55&10%
Ground ..... 55@60&10%
Plain or Unground..60@65&10%
Country Hollow Ware, per 100 lbs. ..... $2.75@3.00
White Enameled Ware:
Maslin Kettles..... 70%
Covered Wares
Tinned and Turned..... 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware.....50&20%
Agate Nickel Steel Ware, Specials.. 60&15%
Iron Clad Ware..... 70&10%
Lava, Enameled..... 40&10%
Never Break Enameled..... 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles..65@65&5%
Avery Kettles..... 60%
Porcelained ..... 50&5@50&10%
Never Break Spiders and Griddles.. 65&5%
Never Break Kettles..... 60%
Solid Steel Spiders and Griddles. 65&5%
Solid Steel Kettles..... 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

Solid Zinc: ℔ doz.
Crescent, family size, bent frame. $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector..... $2.90
Cable Cross, family size, stationary protector..... $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back..... $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back..... $3.25

Washers—Leather, Axle—

Solid ..... 80&10@80&10&10%
Patent ..... 90@90&5%
Coil: ⅞ 1 1⅛ 1¼ 1¾ Inch. 10¢ 11¢ 12¢ 13¢ per box

Iron or Steel—

Size bolt....	*5-16*	*⅜*	*½*	*⅝*	*¾*
Washers ...	*$4.95*	*4.05*	*2.75*	*2.55*	*2.35*

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots..... per lb. 1¾@2¢

Wedges—

Oil Finish..... lb. 2.15@2.30¢

Weights—Hitching—

Covert Mfg. Co..... 40&2
Covert's Saddlery Works..... 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District..... $25.00
Southern Territory..$19.00@20.00
Western and Central Districts ..... $20.00@21.00

Wheels, Well—

8-in., $1.50@1.55; 10-in., $1.65@1.70; 12-in., $2.25@2.35; 14-in., $3.40@3.50.

Wire and Wire Goods—

Bright and Annealed:
6 to 9..... 80&5@80&5&7½%
10 to 18..... 80@80&5%
19 to 26..... 80&10@80&10&5%
27 to 36..... 80&5&5@80&10%
Galvanized:
6 to 9..... 77½@77½&5&5%
10 to 14..... 72½@72½&5&5%
15 to 16..... 75&7½@75&10&2½%
19 to 26..... 75&5@75&10%
27 to 36..... 72½&5@72&7½%
Coppered:
6 to 9..... 77½@77½&5&5%
10 to 14..... 77½@77½&5&7½%
15 to 18..... 75&10@75&10&2½%
19 to 26..... 75&10&5@80%
27 to 36..... 75@75&5%
Tinned:
6 to 14..... 77½@77½&5&7½%
15 to 18..... 75&5@75&10%
Annealed, Steel and Tinned, on Spools ..70&10&10@70&10&10&10%
Brass and Copper on Spools... 60&10@60&10&10%
Brass, list Feb. 26, '96.....30&5%
Copper, list Feb. 26, '96..... 15%
Cast Steel Wire..... 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, 1903..90&10&10&10@..%

Wire Cloth and Netting—

Galvanized Wire Netting..... 80&15@80&17½%
Painted Screen Cloth, 100 ft., $1.20
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft..3 ¢
Nos. 4 and 5 Mesh, sq. ft..3½¢
No. 6 Mesh, sq. ft..... 3½¢
No. 8 Mesh, sq. ft..... 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural ....75&10@75&10&10%
Alligator or Crocodile..70&10@75%
Baxter Pattern S Wrenches... 70&5@70&10%
Drop Forged S..... 45@45&5%
Acme ..... 60&10
Alligator Pattern..... 70
Bull Dog..... 70%
Bemis & Call's:
Adjustable S..... 40
Adjustable S Pipe..... 60
Bemis Pipe..... 60
Briggs Pattern..... 40
Combination Black..... 40&5
Combination Bright..... 40
Merrick Pattern..... 50
Boardman's 33⅓
Coes' Genuine Knife Hdl..40&10&5&5
Coes' Genuine Steel Hdl..40&10&5&5
Coes' Genuine Key Model..40&10&5&5
Coes' "Mechanics'"...40&10&10&5&5
Donohue's Engineer..... 40&10
Eagle ..... 50&10
Elgin Wrenches..... 40
Elgin Monkey Wrench Pipe Jaws 33⅓
Gem Pocket..... 50
Hercules 70
W. & B. Machinist:
Case lots..... 50&5
Less than case lots..... 50
Improved Pipe (W. & B.)..... 60
Solid Handles, P., S. & W..50&10&5
Stillson 65
Vulcan Chain..... 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ℔ gross, $7.50; ℔ doz..... $0.80

Wrought Goods—

Staples, Hooks, &c., list March 17, '92..... 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed..70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters'..... list net

Zinc—

Sheet..... per 100 lbs. $7.75@8.00

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